1044b UIC - EAST POPLAR OIL FIELD **ENFORCEMENT CASE SDWA 1431** Folder ID: 13657 1963 Privileged Release in Fill

East Poplar Oil Field

Region 8 13657

RODUCTION DEPT.

MURPHY COMPORATION, ET AL.

EAST: POPLAR UPIT WELL NO. 12

ECOSEVELT COUNTY, MOSTAVA

1 A

MURPHY CORPORATION, ET AL.

EAST POPLAR UNIT WELL NO. 12

C SW SE Section 3, Township 28N, Range 51E Roosevelt County, Montana

Elevation 2890' K.B.

History	Page	1
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Drill Stem Tests	Fage	9
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It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together, a with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was a "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and common the control of the well has been dynamited, give date, size, position, and common the control of the well has been dynamited. Totahots. Tif plugs or bridges were put in to test for water, state kind-of material used, position, and results of pumping or bailing.

Set 27 mon: 13 2/8% casing 15 before RKB with by yards Rand round 11 sacks come at pose Spudded 12 1/hm surface hole 10-lh-52, and drilled to 1015 Ran Schlumberger ES Total Nepth 1015 driller- 1019 Schfindberger Set 961.93' of 9 5/8" casing at 273;58buvith hoo sacks cement; plug down 3:00 A: New 10-16-52. Drilled plug from 9.5/8" sprface casing, and drilled to 11.70. Drilled from 11.70 to 51.73. Lost drill collars in hole at 5380. Recovered collars on first trip in hole with fishing tool. Strapped pipe out of hole at 1910911 1944 the Colffice 1910 - 5107 S.L.M. Strapped pape cost, at 5170. Depth Correction: 5170 - 5173 S.LMM. Cored "A" Zone, 5173-5512. Depth correction: 5512 - 5513 8 L.M. Corrected top of core to 5174. D.S.T. # 1, 5081-5504, Wenniston Tool, straddle packers, & bottom choke, no W.C. Tool open 2 hrs, Recovered 120' free oil, 30' mid, heavily cut with oil and gas, 30' mid, lightly cut with oil and gas, 90' salt water, chil 62,000 mm. 150' clean mid. IBHFP: 0
FBHFP: 50# Hydro: 3050# No shut in pressure. Drilled from 5512 to 5601. Cut Core #02 ureom 5601 56th ... Des T. # 2, Tested B-20 word from 5632 56th, Johnston Tool 152" bottom choke no W.C. Tool open hours, closed 20 minutes; weak blow throughout. Recovered 195 clean oil; 90 mid, heavily cut with oil and gas, 150 mid cut with gas, 30 smid-cut with gater, 270' salt water (chl. 824000 ppmc) IBHFP: 0ctFBHFP: 360# BHSIP: 2650# Hydro: 3250#. Tested "B-1" Zone from 5615-26. D.S.T. #3; Johnston Tools and Top top top top in the state of t weskiplowouppusepouts hegsedaalagesegophictesedcfessicoffordog they subject hespidare hespidarent Lost packer rubber in hole ... Drilled to 666 ... Tested upper 31 of 32 2 ... D.S.T. #4, 5630-373, Johnston Tool, straddle packers, 3" bottom choke, No W.C. Tool open 4 hours, closed 20 minutes; copen with weak blow, dedressing to a very weak blow, at end of test. Recovered trace of free oil, 900 mid, slightly cut with oil and gas, 210 mid, ... heavily cut with gas and slightly cut with oil, 150 salt water (chi. 52,000 ppm) IBHTP: 10 METSHEP: 150# BHSIP: 2800# Hydro: 3250#. Drilled from 5646 to 5740. Cut Core #3, 5740-5775. Death Corrections 5775 - 5782-6 by Cotyand gulled Core #5, 5782-5800. D.S.T. #5, 5788-5800, (mis-run), 7.5.1. #5, 5768=5800; (mis-run) bottom choke, no W.C. Tool open 4:55 A.M. Lost mud before tool was open. Tool open hours, closed 20 minutes. Recovered 1350' clean mid, 490' slightly of hand gas cut mid. No pressures. Found leak in drill pipe after pulling tool out of hole. Ran Schlumberger E.S. and Microlog. Build Street of a Depth: 5002; Driller fotal Depth: 5000. Ran 5778.10 of the Commandation of t was not drilled previously, dut to a mistake in tubing measurements. Drilled SERIAL NUMBER .. bluk to 58001. (See Affached Sheets) Land Office.
Serial Number

gorm 9-639 🚰 🛣

andet durem No. 42-19355.1. approvid explins 11-20-19.

141115gB

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70-	Winelet Engineer a U.S. Gallegreat Servey
	del Conference Comercon Come, is uppy 011 verporated at Gertan, Mc Level 59855
Side	Secret Property Configuration (Configuration Configuration
Sp	$\mathbf{L}_{\mathrm{opt}}(\mathbf{X})$ is the defining $\mathbf{L}_{\mathrm{opt}}$, which is the second of the \mathbf{X} . The \mathbf{X}
	1411 Att Devices on Course to the section of the se
1.	Flow line from East Poplar Unit No. 12 to "P" Battery developed a leak
	caused by external corrosion.
•	
	150' South of "F" Battery Treater next to emergency pit.
#	
44.5	
7	on the state of the <u>subtraction in the state of the first date of the state</u> of the state of th
	Due to cold winter weather it was impossible to determine actual amount of
The same	resultant damage. Amount of damage appears to be minor.
	February 1, 1976 11:00 A.H.
	1 Hour
	The second secon
	400 of flow line to be replaced with fiberglass
	Applied to the state of the sta
	Front end loader used to scrape up all pollutents. Pollutants then dumped
	in emergency pit.
7	je. 1. n. n. n. n. h., bil be bij met i de kong koment e peremenere was de besetekas ime 1. np. n. n. n. j. n. n. damayer, histor, e e bije gregoring no washing se directify o spinska 1. nestek i n. n. n. n.
	2" Steel line pipe, used for fbw line.
15	"The second state A to the State of the second
	Montanan Oil and Gas Commission - Copy of this form
開発。 7.15で なにも	Dieg 27 nelecu. 2.10.76
agirila. Antibia	· Superintendent

EPU #12

10:	District Engineer, U.S. Gablogical Salvay
From	District Superintendent, Murphy Oil Corporation, Poplar, Montana 59255
Subj	ect: Poliutica Report
Spil	Fire Or 1 Discharge X Blowout Accident Explosion
	Specific Nature or Cause of Incident
	External corrosion of 2" line pipe.
	•
	•
2,	Tomation of Proidmit
4 1	Location of Pacident
	NW SE Section 3, T28N, R51E
	\$100 miles (100 miles
3.	Description of Resultant Damage and Voluma of Pollutant Discharged
	1/2 barrel oil and 3 barrels salt water.
	Saturated ground in a area about 10' x 10'
4.	Date and Time of Occurrence
	January 23rd 8:30 A.M.
5.	Length of Time Required to Control Yacident or Contain Pollutants
	Immediately
6,	Action Takes to Prevent Popularia
u,	Action Taken to Prevent Resurrance
	Replaced steel line pips with 2" fiberglass pipe.
	· · · · · · · · · · · · · · · · · · ·
7.	Measures Taken to Clean Up Pollutants
	Dug hole and buried contaminated dirt - covered and leveled area
8.	The make or manufacturer, size, working and test pressures, date of installation
	type of use, physical damage, etc., of any equipment causing or directly involve with the incident,
	7
	·
9.	Other Federal or State Agencies Notified of Encident
,,	THE STATE OF CHIEF WASHINGTON TO SEE STATE OF THE STATE O
Sig	nature See Date January 24, 1980
ni.	le District Superintendent

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN East Poplar Unit F Battery and Wells EPU Nos. 12 & 39

The East Poplar Unit F Battery and the wells producing into the battery, EPU_12 and 39, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The battery consists of a 4' x 20' vertical separator, a circulating pump with appropriate lines and three 1,000 barrel galvanized bolted tanks. A 2,000 barrel earthen pit is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit F Lease is Murphy Oil Corporation located at P.O. Box 547, Poplar, Montana 59255. The corporation headquarters are at 200 Jefferson Avenue, El Dorado, Arkanaas 71730.

The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to the lease the pumper makes a visual insepction of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a dischargeor spill event.

The field flow lines and the well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 2,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in thepit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The three 1,000 barrel tanks are galvanized and are bolted construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

Each of the wells produce with a rod pump. Ther are 4' x 4' x 2 cellars at each wellhead with overflow lines at earthen pits capable of holding a full days fluid production in case of a leak at the well site.

The tank battery is about # mile from the Poplar River sloping West. The EPU

No. 12 is about 1.4 miles from the river and the EPU No. 39 is about 0.4 mile from the river. The soil is sandy and is partly in pasture and partly cultivated. The EPU No.

use 1st 2 sertness (or changes) & estatution of Recordine for remaindar of PF.

39 is closest to the river but is located on a hill above a level pasture that occasionally floods in the Spring. However, the water level never reaches the well or its overflow pit. Therefore, The 2,000 barrel pit at the tank battery and the overflow pits at the wells are sufficient secondary containment for these facilities.

The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature	
Name	
Title	

CERTIFICATION

Ι	hereb	у с	erti	Lfy	that	I h	nave	examin	ned t	he fa	cility	y, and	d be:	ing f	Familiar	with	the	pro-
ν	isions	of	40	CFR	, Par	t 1	112,	atest	that	this	SPCC	Plan	has	beer	n prepare	ed in	acco	ordance
W	ith go	od	engi	inee	ring	pra	actio	es.										÷-

	Printed Name Of Registered Professional Eng	gineer
(Seal)	Signature Of Registered Professional Engine	
Date	Registration No. State	

Contingency Plans For An Oil Discharge East Poplar Unit F Battery and Wells EPU Nos. 12 & 39

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occurring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, the pumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Brill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of ...
Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

Telephone numbers and personnel to be notified in case of an oil discharge are as follows:

Numbers will be listed as shown on other plans

File#12

A.F.E. No. 55-8 .

AUTHORITY FOR EXPENDITURE MURPHY CORPORATION - EAST POPLAR UNIT NO. 12 (Installation of Pumping Unit) C SW SE Sec. 3, Twp. 28N., Rge. 51E., Roosevelt Co. Montana

Pumping Unit, complete w/engine	•	\$8,200
Labor and materials, setting unit		750
Trucking, small fittings, & incidentals		150
Total Estimated Cost	•	\$9,100

APPORTIONNENT OF TOTAL ESTIMATED COSTS

	(א)	
Murphy Corporation (Operator)	14.678953	. 1835
Marine Oil Company	16,772517	1526
Mumoco Company	2,096565	191
Placid Oil Company	33.545035	3053
Carter Oil Company	16,985860	1487
Phillips Petroleum Co.	16.935860	1487
C. Y. Lundgren	.238210	. 21

APPROVAL OF EXPENDITURE	•
Production Department	Approved
Requested by Rudon Firly is	Budget Section
Date	
Approved by	By L. Bearly
Date	Dato 7-13-54
	Date
Executive Department	
Approved by	
Date	ŧ

• - This A.F.E. includes estimated cost to install permanent unit to replace the portable unit now operating. The skid mounted unit will be moved to East Poplar Unit No. 32.

HJT:BD-1c

7-1-54

Tille EPU !!

A.F.E. No. 55-455 Workover

AUTHORITY FOR EXPENDITURE EAST POPLAR UNIT WELL \$12 (Workover) SW SE Section 3-T28N-R51E, Roosevelt County, Montana

Pulling mechine, 8 days Coment and pump service	\$ 2,400 1,360
Water hauling	300
Packers and service	1,625
Total Estimated Cost	\$ 5,685

To locate hole in 5 1/2" casing and squeeze cement to shut off.

APPORTIONMENT OF TOTAL ESTIMATED COST

	%	
Murphy Corporation -		•
Unit Operator	31.448470	\$ 1,788
Munoco Company	2.096565	119
Placid Oil Company	33.545035	1,907
Carter Oil Company	16.335860	929
Phillips Petroleum Company	16.335860	929
C. F. Lundgren	.238210	ĬĹ.

APPROVAL OF EXPERIDITURE

	Requested by:		Recommend Approval:	
	Division Production Supit.	6-30-55	General Production Supit.	Date
	Recommend Approval:		Recommend Approval:	
/	MvIsion Manager	6-30-57 Date	Budget Supervisor	Date
			Approved:	
			Vice President-Operations	Date

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Tible W

A. F. E. NO. 3-1515

AUTHORITY FOR EXPENDITURE MURPHY CORPORATION - EAST POPLAR UNIT NO. 12 C SW SE Section 3, T28N, R51E, Roosevelt County, Montana

(Confirming)

JUSTIFICATION:

There was 63 jts., 1892' of Class #4 tubing in the 2-7'8" tubing string as indicated by Dia-Log Caliper Survey and the cost of pulling tubing and locating tubing leaks had become prohibitive:

ESTIMATED COST

Pulling Unit 29 hrs. at \$30 per hour Dia-Log tubing	\$ 900 \$ 300
1892' of 2-7/8" BUE 6.50#; 8rd thd. Class 2 Tubing at \$0.60 per foot Misc. labor, trucking and material	\$1,150 \$ 300
TOTAL ESTIMATED COST	\$2,650

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	\$	833
Munoco Company	2.096565%	\$	56
Placid Oil Company	33.545035%	\$	889
Humble Oil & Refining Company	16.335860%	\$	433
Phillips Petroleum Company	16.335860%	\$	433
C. F. Lunderen	.238210%	8	6

APPROVAL OF EXPENDITURE

	M. Todales	Date	Recommend Approval:	
L. L. Duncan	row .	6-/4-62 Date	W. J. Thornton	Date

APPROVED:

Sanager - P. &B. Date

MTJ/bab 6-7-63

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12 SW SE Section 3, T29W, R51E, Roosevelt County, Montana (Change Rod String)

HISTORY: Rod string - Part of the initial rod string installed January, 1953. The following rod parts have occured and rods added August, 1965 through October 9, 1966.

Date	Type Part	Size	Denth	Rods Added Boxes
12-13-65	Box	7/8"	200'	75' 7/8" Cls.#1 3 7/8"
1				12 3/4"
15-66	Bo::	7/8"	250'	1 7/3"
3-27-66	Pin	7/8"	100'	25' 7/8" Cls.⊽1 5 3/4"
5-16-66	Body	7/8"	1150 [*]	25' 7/8" Cls.\$1
5-31-66	. Pin	3/4"	3500 '	500' 7/8" Cls.₽2
8-10-66	Pin	7/8"	50'	450' 3/4" Cls.#1 1 7/8"
				24 3/4"
10-5-66	Box:	3/4"	2850'	Pumping with fishing tool

PRESENT STATUS: Pumping from the B-1 & 2 Zones 10-2-66. Well Test 160 BFPD 75% Water 40 EGPD 120 EWPD.

RECOMMENDATION: Lay down all 7/8" except 500' Class No. 2 run 5-31-66. Lay down all 3/4" except 450' Class No. 1 run 8-10-66. Run 38% 7/8" Class No. 1 and 62% 3/4" Class No. 1.

ESTIMATED COST

Pulling Unit 16 hrs. at \$33.00 per hr. (stripping job) 1600' 7/8" Class No. 1 and 2950' 3/4" Class No. 1	•	\$ 525.00
Sucker Rods		\$ 2,175.00
Tuboscope old rod string at \$2.15 per rod.		\$ 400.00
Less credit for est. 65% of old rod string at 75% of cost.		(\$ 1,100.00)
Misc, trucking and labor handling old:rod string		\$ 175.00
Total Estimated Net Cost		\$ 2,175.00

Estimated pay out including lost production 9 rod parts.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation Placed Oil Company	31.448470% 33.545035%	\$ \$	634.00 730.00
Humble Oil and Refining Company	16.335860%	\$	355.00
Drilling Specialties Company	16.335860%	\$	355.00
Manoco Company	2.096565%	\$	46.00
C. F. Lundgren	.238210%	\$	5,00

APPROVAL OF EXPENDITURE

L. L. Duncan	Date		
M. James	<u>/n-//-</u> /c/ Date	W. J. Thronton	Date
Requested by:		APPROVED:	

MTJ/sb October 10, 1966

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AUTHORITY FOR EXPENDITURE 15FROM OT, COMECRATION - FAST POPLAR DATE NO. 12 SW SE Section 3, T28H, R51E, Reservate County, Montana (Change Tubing String)

PRISENC SANTUR: Rumping from the B-1 & 2 Zones comingled. August 9, 1968 Well Test 123 DEED 78% Maker Cut 27 DOPD 96 DWPD.

Tubing Record

الراق من الأواريد الراق من الأواريد مستحدد بالاستخدام الإستادارية	and the second s	iivica-cest	Daptia	Esta Cost
19+0+66	Yes	and the set say the any are the task		\$ 1,255.60
10-16-67	lio	to ph on its up py he up to	4753 1	\$ 525,00
5-20-30	No	40 at 10 to 10 to 10 to 10 to 10	49001	\$ 1,057,00
				0 2,647.00

PACKNOST: White tubing leak change complete string of tubing. (Pay out including lock production 6.3 tubing leaks.)

ESTIMATED COST

Rulling Unit, 20 hrs. et \$33.00 per hour	••	\$ 675,00
5550° ba 2-7/0" Tubing, Glass-No. 1 at \$1.02 per ft.		\$ 5,675,00
Tuboscopa Calvaged Tubing at \$3.00 per joint		\$ 550,00
Gradia for Bothmated 12% Class No. 2 (678') at \$3.77 per ft.		(\$ 525,00)
Gradia for Matimated 30% Glass Mo. 3 (1665) at \$0.30 per ft.		(\$ 500.00)
Greatt for Routested 58% Class No. 4 (32071) at \$0.20 per ft.		(\$ 650,00)
Thou, Labor, Trucking and Material		\$ 400,00
Total Estimated Cost		\$ 5,625,00

APPORTIONMENT OF TOTAL ESPENATED COST

Murphy Oil Corporation	31.448470%	\$ 1,769,00
Placid Oil Company	_{<} ,33,545035%	\$ 1,697,00
Humble Gil & Refining Company	16.399850%	\$ 919,60
Drilling Specialties Company	16.335860%	\$ 919,00.
Huncoo Company	2.096565%	\$ 113,00
G. F. dundgren	.238210%	\$ 18,00

APPROVAL OF EXPENDITURE

Requested by:

Approved:

M. J. January Bace W. J. Thomason Date

AMMU/ob Ammgoo: 15, 1969

ADMINISTRAÇÃO ESTADOLIDAS DE SE DESCRIPTO SE ESCRIPTO SE ESCRIPTO

PRECENT STATUS: Hamping from the B-1 & 2 Sones comingled. Hovember 1, 1962 Wall Your 128 NFVD 79% W.C. 27 DDVD 101 MVD.

Tubing Rocess

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9-3-66	Yes	and gen yer die noor old is de sek ofer noor	get the set out the	0 1,253,00
10-16-67	50	and the state of the state of the state of	47501	9 535,00
5-29-68	c R	***************************************	40001	

MARINARY: West multing lank change complete string of tubing. (May out including last production 5.% teblag lasts.)

	ESTIMETED COST	7-
Publing Unit, 20 Land. on \$83.00 per 45:0° of 2-7/8° midding, Class We. 1 15:0° of 2-7/8° cabing, Class We. 1 Tuboucope Calvaged Nabing on \$3.00 Guille for Selfmand 120 Class We. Condit for Selfmand FA Glass We. Condit for Resident FA Glass We. Total Estimated Cons	t ma \$1.02 per Si. 3 et \$0.30 per Si. per joins 2 (670) et \$0.77 per Si. 3 (8505) et \$0.30 per Si.	\$ 675,00 \$ 6,235,00 \$ 650,00 \$ 550,00 \$ 500,00 \$ 500,00 \$ 6,035,00 \$ 6,035,00
	COURT OF PORMS PROVINGED CARD	
Christy Gill Composition Ploude Gill Composition Plants Gill Composity Carble Gill Gillining Composy Chilling Openial rise Company Chilling Openial rise Company Chillin Company O F. Amnignes	31,4464700 ,36,5450350 16,33566N 16,33566N 2,093565N	0 1,620,00 0 1,522 00 0 740,00 0 760 00 0 01,20 0 01,70

APPROVAL OF EXPERIENCES.

In product by:

APZROPLICE

TAL J Closenta

AUTHORITY FOR EXPENDITURE MERPHY OIL CORPORATION - EAST POPLAR UNIT No. 12, 58, 6 83 Rossyelt County, Montana

ERESENT STATES: Wells pumping with no Cathodic potection.

PROPOSAL: Install sufficient anodes to protect cosings and flowlines for the life of the walls.

AUSTIFICATION: The Cathodic Protection System that was originally installed in 1966 has deteriorated completely and is giving no protection at all. Additional anodes are needed to protect the well casings and flowlines until depletion date, which is cometime in 1974. We have not had a casing leak with proper protection since May, 1986.

ESTYPATED COST

Anodes installed in 12" % 20' holes C/W 750# Coke Breeze and	
Tied into existing lines	\$ 1,200.00
Hisc. Labor, Interial and Trucking	\$ 350.00
TOTAL EST HATED COST	\$ 1,500.00

APPORTIONARY: OF TOTAL ESTIMATED COST

Eurphy Oil Corporation	31.448470%		\$	672.00
Placid Gil Company	33.545035%	•	Ś	503.00
Humble 011 and Refining Company	15.335860%		\$	245.00
Phillips Petroleum Company	16.335860%		Ş	245.00
Minoco Company	2.095555%		\$	31.00
C. F. Lundgren	.233210%		\$	4.00

APPROVAL OF EXPENDITURE

Requested by:

APPROVED:

ĽŁ	1. Sands	9-19-69 Date	W. J. Thornton	Date
• • •	- · ecues	Date	W. J. Indenton	Date

MIJ/sb September 19, 1969

A.F.E. No. 9-1520 -10

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NOS. 12, 58, & 83 ROOSEVELT COUNTY, MON TANA

PRESENT STATUS: Walls pumping with no Cathodic protection.

PROPOSAL: Install sufficient anodes to protect casings and flowlines for the life of the wells.

JUSTIFICATION: The Cathodic Protection System that was originally installed in 1964 has deteriorated completely and is giving no protection at all. Additional anodes are needed to protect the well casings and flowlines until depletion date, which is sometime in 1974. We have not had a casing leak with proper protect on since May, 1966.

ESTIMATED COSTS

Anodes installed in 12" X 20' holes complete with	•
750# Coke Breeze and Tied into existing lines	\$ 1,200
Miscellaneous Labo::, Material and Trucking	30(

TOTAL ES 'IMATED COSTS

\$ 1,500.

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Oil Corporation	31.448470%	 \$ 47:	
Placid Oil Company	33.545035%	50:	
Humble Oil & Refining Company	16.335860%	24	,
Phillips Petroleum Company	16.335860%	24:	!
Munoco Company	2.096565%	33	t.
C. F. Lundgren	.238210%	L	

APPROVAL OF EXPENDITURE

Requested By:

APPROVED:

MTJ/sb/bka 9-25-69

>110:1 & - T. James

300,5100, USM 1 2 1970

-A.F.E. No. 70-1500 -10

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12 SW SE Section 3, T28N, R51E, Roosevelt County, Montana (Change Tubing String)

PRESENT STATUS: Pumping from the B-1 & 2 Zones comingled. December 11, 1969 Well Test 26 BOPD 104 BWPD.

Tubing Record

Date	Type Leak	Rydro-Test	Depth	Est. Cost
5-29-68	Rod Cut	Yes	4900 '	\$ 1,015
3-21-69	Crack Body	. Yes	2418'	\$ 953
6-19-69	Crack Body	Yes	4650'	\$ 889
10-2-69	Crack Body	. No	4809'	\$ 1,025
12-31-69	Crack Body	Yes	1884'	\$ 1,688
	,		•	\$ 5,570

PROPOSAL: Next tubing leak change 4050' off bottom of tubing. Stand top 1500' in derrick and run on top of tubing string. (Pay out including lost production 3.4 tubing jobs.)

ESTIMATED COST

Pulling Unit 18 Hrs. at \$37.00 per hr.		\$ 675.00
4050' of 2-7/8" tubing Class No. 1 at \$1.02 per foot		\$ 4,131.00
Tübôscope salvaged tubing at \$3.10 per joints		\$ 548.70
Credit for estimated 20% Class No. 2 (1110') at \$0.77 per foot	-	(\$ 854.70)
Credit for estimated 30% Class No. 3 (1665') at \$0.26\frac{1}{2} per foot		(\$ 441.23)
Credit for estimated 50% Class No. 4 (2775') at \$0.20 per foot		(\$ 550.00)
Misc. Labor Trucking and Material		\$ 400.00
TOTAL ESTIMATED COST	•	\$ 3,903.77

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation		31.448470%		•	\$ 1,227.68
Placid Oil Company	٠.	33.545035%			\$ 1,309.52
Humble Oil and Refining Company	•	16.335860%			\$ 637.71
Phillips Petroleum Company		16.335860%			\$ 637.71
Munoco Company		2.096565%			\$ 81.85
C. F. Lundgren		.238210%	••		\$ 9.30

APPROVAL OF EXPENDITURE

Requested by:

APPROVED:

/// Jones

1-8-70 Date

W. J. Thornton

- /2 - /2

MTJ/sb . January 8, 1970 Complete Jaw. 1970

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO, 12 SW SE Section 3, T28N, R51E, Roosevelt County, Montana (Change Rod String)

Proposal and Justification: It is proposed to change the rod string, except for the 5/8" rods, with Condition 2 tuboscoped rods.

East Poplar Unit No. 12 has had 5 rod parts since March, 1972, the total cost of these breaks being \$2,405. The parts have not been concentrated in either the 3/4" or 7/8" rods. This well is producing at the rate of 135 BFPD 30 BOPD 105 BWPD 78% BS&W from the B-1 & 2 Zone. Payout would be 5 rod parts or 9 months with down time and lost production at a minimum.

ESTIMATED COST

Pulling Unit, 10 hrs. at \$40.00	\$ 400
2000' of 7/8" Condition 2 Rods	925
3400' of 3/4" Condition 2 Rods	1,100
Credit for 216 Rods	(300)
Labor to haul rods	150
Misc. Labor, Material and Trucking	150
Total Estimated Cost	\$ 2,425

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 763
Placid Oil Company	33.545035%	813
Humble Oil & Refining Company	16.335860%	396
Phillips Petroleum Company	16.335860%	396
Munoco Company	2.096565%	51
C. F. Lundgren	.238210%	6

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. C. Brown Date

ate A. W. Simpson

This job went as planned with no problems. We were under A.D.E.'d cost because the hauling of rods was done quicker than anticipated and no misc. expenses.

Date Job Completed 2/5/72 Approximate Cost \$2, 298

By Gerald Hagadone

WGB/sb January 12, 1973

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12 SW SE Section 3, T28N, R51E, Roosevelt County, Montana (Acidize The B-1 & 2 Zones)

PROPOSAL & JUSTIFICATION: It is proposed to acidize the B-1 & 2 perforations (5614-22' and 5632-40') with 750 gallons of 15% HCL, 10% U-66 solvent, inhibitor and iron sequesting agent added.

This well was originally completed (December, 1952) in the B-1, B-2, and C-Zone with all zones acidized at that time. In June, 1955 the C-Zone was blanked off and a casing leak repaired at 3840' leaving the B-1 & 2 Zones producing. In October, 1964 another casing leak occurred at 3855' and was repaired. The B-Zones still producing without stimulation. September, 1964, before 2nd. casing leak, test show 190 BFPD 59 BOPD 131 BWPD 69% BS&W while the October test, after casing leak was repaired, shows 130 BFPD 32 BOPD 98 BWPD 75% BS&W. Last quarter test indicates 131 BFPD 27 BOPD 104 BWPD 79% BS&W which should be able to be raised to the 190 BFPD test. An increase of 13 BOPD is anticipated giving a payout of 50 days assuming \$5.00 per bbl..

ESTIMATED COST

Pulling Unit		\$ 1,000
Packer Repair		\$ 400
Hydrotest	•	\$ 450
Acid and Services		\$ 1,100
Misc. Labor, Material and Trucking		\$ 250
Total Estimated Cost		\$ 3,200

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,006
Placid Oil Company	33.545035%	\$ 1,073
Exxon Company, U.S.A.	16.335860%	\$ 523
Phillips Petroleum Company	16.335860%	\$ 523
Munoco Company	2.096565%	\$ 67
C. F. Lundgren	. 2382107	\$ 8

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown

Date A. W. Simpson

WGB/sb January 28, 1974 AUTHORITY FOR EXPENDITURE

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12

SW SE Section 3, T28N, R51E, Roosevelt County, Montana (Acidize The B-1 & 2 Zones)

PROPOSAL & JUSTIFICATION: It is proposed to acidize the B-1 & 2 perforations (5614-22' and 5632-40') with 750 gallons of 15% HCL, LO% U-66 solvent, inhibitor and iron sequesting agent added.

This well was originally completed (December, 1952) in the B-l, B-2, and C-2one with all zones acidized at that time. In June, 1955 the C-Zone was blanked off and a casing leak repaired at 3840' leaving the B-l & 2 Zones producing. In October, 1964 another casing leak occurred at 3855' and was repaired. The B-Zones still producing without stimulation. September, 1964, before 2nd. casing leak, test show 190 BPPD 59 BOPD 131 BWPD 697 BS&W while the October test, after casing leak was repaired, shows 130 BPPD 32 BOPD 98 BWPD 757 BS&W. Last quarter test indicates 131 BPPD 27 BOPD 104 BWPD 797 BS&W which should be able to be raised to the 190 BPPD test. An increase of 13 BOPD is anticipated giving a payout of 50 days assuming \$5.00 per bbl..

EST IMATED COST

Pulling Unic		\$ 1,000
Packer Repair		\$ 1,000
Hydrotest		
Acid and Services		\$ 450
 	•	\$ 1,100
Misc. Labor, Material and Trucking		\$ 250
Total Estimared Cost	•	\$ 3,200

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,006
Placid Oil Company	33.545035%	\$ 1.073
Exxon Company, U.S.A.	16.335860%	\$ 523
Phillips Petroleum Company	16.3358602	\$ 523
Munoco Company	2.0965657	s 67
C. F. Lundgren	. 2382102	\$ 8

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

G. Brown Date

Date · A. W. Simpson

Date

WGB/sb January 28, 1974

A.F.E. No. 6-1501-10

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MURPHY OIL CORPORATION F EAST POPLAR UNIT NO. 12 SW SE Section 3, T28N, R51E, Roosevelt County, Montana (Replace Section Of Flow Line)

It is proposed to replace 400° of 2" steel flow line used for East Poplar Unit No. 12 with 2" fiberglass pipe.

Numerous leaks have occurred in the flow line from East Poplar Unit No. 12 to "F" Battery. The majority of leaks have been concentrated in the section of line nearest "F" Battery. These leaks have been caused by external corrosion. This problem would be taken care of by using fiberglass pipe to replace the bad section of line.

ESTIMATED COST

2" A.O. Smith Fiberglass Pipe		Crossover	Fittings,	Glue	·Kits	•	\$ 462
Routabout Labor, Backhoe, Etc					•		\$ 800
Supervision							\$ 125
Total Estimated Cost	į	,•			•		\$ 1,387
	j				•	•	

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	. 31.448470%		\$ 436
Placid Oil Company	33.545035%	•	\$ 465
Exxon Company, U.S.A.	16.335860%		\$ 227
Phillips Petroleum Company	16.335860%		\$. 227
Munoco Company	2.096565%		\$ 29
C. F. Lundgren	.2382107		\$ 3

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy of Melear Date A. W. Simpson Date

1523

TCH/sb Pebruary 5, 1976

MURPHY OIL CORPORATION AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 12 SW SE SECTION 3, T28N-R51E - ROOSEVELT COUNTY, MONTANA

PERFORATE ADDITIONAL SECTION & INSTALL REDA PUMP

PROPOSAL & JUSTIFICATION

This well is now producing from the "B-1" & "2" Zones at 22 BOPD and 137 BWPD. The "C" Zone is blanked off with a Baker Model "K" bridge plug at 5754'.

It is proposed to set a packer below the "B-2" Zone, perforate the "B-4" Zone (5693-5698') together with the "B-3" Zone (5655-5660') and test. Then, isolate all "B" Zones and perforate and test the "A-4" Zone (5501-5503').

These Zones, commingled with the presently open "B-1" & "2" are expected to yield total fluid production volumes which will be excessive for the beam pumping unit (228,000 in. - 1b.) now on the well. It is proposed that the low volume test Reda (Type D20E, 94 Stage powered with a 70 HP Motor) formerly in use in EPU #58 be moved to this well.

Expected daily production is 650 BFPD, 590 EWPD and 60 BOPD. This would give us an increase of 38 BOPD. An increase in production of 38 BOPD would pay out in approximately 3 1/2 months and yield an increased rate of return in excess of 50%. This well is in a competitive area and any increase would effectively represent a net gain in recovery.

ESTIMATED COST

Packer Services	\$ 1,3	50
Perforating Services	3, 5	00
Acid Services and Truck	3,8	00
Rig Time (Workover, Swabbing and Run Reda)	4.6	80
Reda Serviceman		00
Roustabout Labor to Run Reda		80
Supervision	6	00
Reda Pump	13,0	00
Credit for Lufkin Pumping. Unit and 30 H.P. Electric Motor	(5, 0	00)
Credit for 7/8" and 3/4" Rods (5500')	(3,0	<u>25</u>)
BOOKET TOWNS COOK	¢ 20 2	0 6

TOTAL ESTIMATED COST ----- \$ 20, 285

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 6,379
Placid Oil Company	33.545035%	. 6, 805
Exxon Company, U.S.A.	16.335860%	3, 314
Phillips Petroleum Company	16.335860%	3,314
Munoco Company	2.096565%	425
C. F. Lundgren	. 238210%	48

APPROVAL OF EXPENDITURE

Requested:

APPROVED:

BILLY G. MELEAR

3/25/76 Date Daye

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12 SW SE Section 3, T28N, R51E, Roosevelt County, Montana (Supplement No. 1 - Run Reda Pump)

Supplement No. 1 is to cover the added estimated expense on running a high volume lift pump in this well. A tubing anchor had previously been left in the hole and had to be fished before work could proceed on well. Also a 10,000 gallon acid job plus two other acid jobs were done on this well. The larger acid job was not anticipated when the A.F.E. was prepared. These two things helped to contribute to raising the rig costs. Additional rig time also resulted from added swabbing time.

ESTIMATED COST

	Original	Revised	Supplement
	Estimate	Estimate	No. l
Packer Services	\$ 1,350	\$ 2,765	\$ 1,415
Perforating Services	\$ 3,500	\$ 2,935	(\$ 565)
Acid Service and Truck	\$ 3,800	· \$15,565	\$11,765
Workover Rig	\$ 4,680	\$17,555	\$12,875
Reda Serviceman	\$ 1,000	\$ 1,000	\$
Reda Pump	\$13,000	\$13,000	\$
Roustabout Labor	\$ 380	\$ 615	\$ 235
Misc. Material, Supervision and Trucking	\$ 600	\$ 1,485	\$ 885
Fishing Tools	\$	\$ 2,985	\$ 2,085
Credit For Pumping Unit	(\$ 5,000)	(\$ 5,000)	\$
Credit For Rods	(\$ 3,025)	(\$ 3,025)	\$
TOTAL ESTIMATED COST	\$20,285	\$48,980	\$28,695

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470% \$ 6,379	\$15,404	\$ 9,025
Placid Oil Company	33.545035% \$ 6,805	\$16,430	\$ 9,625
Exxon Company, U.S.A.	16.335860% \$ 3,314	\$ 8,001	\$ 4,687
Phillips Petroleum Company	16.335860% \$ 3,314	\$ 8,001	\$ 4,687
Munoco Company	2.096565% \$ 425	\$ 1,027	\$ 602
C. F. Lundgren	.238210%, \$ 48	\$ 117	\$ 69

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

A.F.E. No. 0-1501-10

MURPHY OIL CORPORATION AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 12 SW SE Section 3, T28N, R51E, Roosevelt County, Montana

It is proposed to replace 1300' of 2" flowline starting 625' South of "F" Battery and laying South to East Poplar Unit No. 12. This section of flowline has experienced numberous leaks during the past few months.

ESTIMATED COST

1300' of 2" Fiberglass, Silver Thread and Glue Kits	\$ 1,800
Labor to Lay and Ditch	\$ 2,145
Supervision and Misc.	\$ 200
Total Estimated Cost	\$ 4,145

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,304
Placid Oil Company	33.545035%	\$ 1,390
Exxon Company, U.S.A.	16.335860%	\$ 677
Phillips Petroleum Company	16.335860%	\$ 677
Munoco Company	2.096565%	\$ 87
C. F. Lundgren	.238210%	\$ 10

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy (Melear

Date

W. Simpson

appropinate last

BGM/sb February 4, 1980

MURPHY OIL CORPORATION AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 12 SW SE Section 3, T28H, R51E, Rossevelt County, Montana

It is proposed to replace 1300, of 2" flowline starting 625' South of "F" Battery and laying South to East Poplar Unit No. 12. This section of flowline has experienced numberous leaks during the past few months.

ESTIMATED COST

1300' of 2" Fiberglass, Silver Thread and Glue Kits	\$ 1.800
Labor to Lay and Ditch	\$ 2,145.
Supervision and Misc.	\$ 200.
Total Estimated Cost	\$ 4,145
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APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,304
Placid Oil Company	33.545035%	\$ 1,390
Exxon Company, U.S.A.	16.3358607	\$ 677
Phillips Petroleum Company	16.335860%	\$ 677
Munoco Company	2.096565%	\$ 87
C. F. Lundgren	.238210%	\$ 10

APPROVAL OF EXPENDITURE

Requested by: Approved by:

Bient melias	2.13.80			
Billy O Melear		A. W. Simpson	:	Date

AUTHORITY FOR EXPENDITURE MURPHY CORPORATION - EAST POPLAR UNIT #12 Center SW of SE of Sec. 3, Twp. 28 N., Rge. 51 E., Roosevelt Co., Montana

WELL DRILLING & CONSTRUCTION EXPENSE	TO CSG. PT.	COMP. & EQUIP.	TOTAL COST
Drilling: Footage - 5800' @ \$8/ft.	\$ 45-400	\$	\$ 46,400
Day Work - 5 days @ \$925/day	•	L,625	4,625
Loc. survey, permit & prep.	200	_	200
Roads, fences, cattleguards, etc.	250		250
Mud mat. & chem., incl. oil	5,200		5,200
Fuel	5,500		5,500
Water	250		250
Drilling bits, baskets, etc.		200	. 200
Cementing casing	900	9 50	1,850
Coring materials & services	3,500		3,500
Testing services, incl. swabbing	1,800	300	2,100
Perforating services	-	<i>6</i> 50	650
Other logs, surveys & analyses	1,400	<i>6</i> 50	2,050
Hydrafrac, acidize, etc. incl. oil	•	750	750
Float equip., centralizers, etc.	125	250	375
Tubular inspection, testing, etc.		1,200	1,200
Trucking, welding & other labor	500	600	1,100
Supervision & Miscellaneous	1,800	1,200	3,000
Total est. well drilling & const. expense	67,825	11,375	79,200
WELL EQUIPMENT COST			
Casing: 1000' of 9-5/8" O.D. @ \$3.30/ft.	3,300		3,300
Caring: 6000' of 5-1/2" O.D. @ \$1.75/ft.	,,,,,,,,	10,500	10,500
Tubing: 6000° of 2-3/8" O.D. @ \$0.55/ft.		3,300	3,300
Packers, etc.		650	650
Casing head & connections	300	-	300
Xmas tree & connections		1,200	1,200
Total est. well equip. cost	3,600	15,650	19,250
Total Est. Cost of Well	71,425	27,025	98,450
	11,427	21,023	70,430
LEASE EQUIPMENT			
Tanks, erected		6,000	6,000
Heater-treaters		6,400	6,400
Flow lines		800	800
Other line pipe, valves & fittings		750	750
Trucking, welding & other labor		800	800
Miscellaneous		700	700
Total Est. Cost of Lease Equip.		15,450	15,450
Total Est. Cost of Well & Lease Equip.	\$ 71,425	\$ 42,475	\$113,900

APPORTIONMENT OF TOTAL ESTIMATED COSTS

	APPROVAL OF EXPENDIT	TURE	
Production Department		Approved	
Requested by			
Date			
Approved by		Ву	
Date	V.P.		
	•	Date	
Executive Department			_
Approved by			
Data	Pres.		

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Permit App
13 pages
152-> Flo

Form 23.1b—1M—4-52

U. S. DEPT. OF THE INTERCOR - GEOLOGICAL SURVEY of the State AVAILABLE

U. S. DEPT. OF THE INTERCOR - GEOLOGICAL SURVEY of the State

OIL AND GAS WELL DIVISION

OCI Billings

SUNDRY NOTICES AND REPORT OF WELL

(Indicate Nature of Data by Checking)

Notice of intention to drill	X	Subsequent record of shooting
Notice of intention to change plans		Record of perforating casing
Notice of date for test of water shut-off		Notice of intention to pull or otherwise alter casing
Report on result of test of water shut-off		Notice of intention to abandon well
Notice of intention to redrill or repair well		Subsequent report of abandonment
Notice of intention to shoot -		Supplementary well history
	- 1	

Following is a {report	of work done	on land {owned } described as follows:		
MONTAN	A	Roosevelt	East Pop	lar
(State)	(County)	(Field)
Well No. 12	C SW SE 3	28 N	51 E	
	(m.sec.)	(Township)	(Range	Meridian)
The well is located	660 ft. { \$\frac{1}{2}\text{\$\frac{1}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}{2}\text{\$\frac{1}\text{\$\frac{1}\text{\$\frac{1}\text{\$\frac{1}\text{\$\frac{1}\text{\$\frac{1}\$\fra	of South line and 1980 ft. { T	$\left\{ egin{array}{ll} $	of Sec3

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work.)

13 3/8" conductor casing will be set at approx. 40' and cemented w/50 sx. 9 5/8" surface casing will be set at approx. 950' and cemented with 400 sx. Total depth is expected to be 5850' so as to test the "3" and "C" zones of the Madison formation. 52" casing will approximate "C" zone.

- .. No well is to be spudded in unless a \$5,600.00 surery drilling bond has seen posted and approved by the Board of Railroad Commissioners.
 - 2. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
- 3. Surface or conductor casing must be properly comented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
- i. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, re-drill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by Supervisor prior to commencement of work.
- 5. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing units be adequately protected by casing, mud or coment, as drilling progresses.
- 6. The production string must be cemented unless a formation shut-off or packer is approved by the Supervisor. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
- All production strings of easing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
- A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when a supervisor visits the well.
- supervisor visits the well.

 In corporation with name of the operator, number of the well and locately affine reasonable precautions to preserve these may thus a supervisor of the well and locately and the precautions to preserve these may thus a supervisor of the well and locately and the precautions to preserve these may thus a supervisor of the well and the precautions of the well and the precaution of the well and the
- tions to preserve these mertines at all three partines.

 10. Copies of all directional surveys, electrical logs, or tops from electrical log if electric surveys is run, fournation tests, and cementum record as farfulfied DOTH, establing common, editTroust be filed with the Ster Sentence view district togetherit with four copies of, the log upon competion of the well.

Porm No. 2 (SUBMIT IN QUADRUPLICATE)
GENERAL RULES 201, 202, 213, 216, 219, 233.1

<u>.</u> 3

27874

(OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

NOTICE! THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

BILLINGS OR SHELBY

	<u>:</u>		91	L AND BAS CONSER	ESISPIMMOD AGITAT
Notice of Intention to Drill		1 11	nt Report of Water Shup		~
Notice of Intention to Change P			nt Report of Shooting, Ac		<u> </u>
Notice of Intention to Test Water			nt Report of Altering Car		
Notice of Intention to Bedrill or			nt Report of Redrilling of		
Notice of Intention to Shoot, A		-	nt Report of Abandonme	nt	
Notice of Intention to Pull or A		- Suppleme	entary Well History		<u> </u>
Notice of Intention to Abandon	Well	Report of	f Fracturing		
*		1 11			
(Inc	dicate Above by Check	Mark Nature of Rep	ort, Notice, or Other Dat	•	
owing is a report of work do	one one	land leased	described as follows:		·
MONTANA(State)					
					'ield')
No. 12 SH S	E Section 3		28N	51E	и.Р.М.
well is located	of this form the well	location, and show lea	se boundary.)		AD CAREFULI
Locate accurately on Plat on back elevation of the derrick floor	of this form the well r above the sea lev DETA s to objective sands; s d work, particularly a	rel is2089! K. ILS OF PLAN OF how size, weights, and il details results Shoot	Re boundary.) WORK lengths of proposed casirting, Acidizing, Fracturing	RE	AD CAREFULI
Locate accurately on Plat on back elevation of the derrick floor D CAREFULLY State names of and expected depth	of this form the well r above the sea lev DETA s to objective sands; s d work, particularly a	location, and show leaded is 2089! K. ILS OF PLAN OF thow size, weights, and il details results Shoot	Re boundary.) WORK lengths of proposed casirting, Acidizing, Fracturing	RE	AD CAREFULI
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Locate accurately on Plat on back elevation of the derrick floor D CAREFULLY State names of and expected depths, and all other important propose	of this form the well r above the sea lev DETA s to objective sands; s d work, particularly a	location, and show leaded is 2089! K. ILS OF PLAN OF thow size, weights, and il details results Shoot DETAILS OF WOR RESULT	WORK lengths of proposed casirting, Acidizing, Fracturing	RE ngs: indicate mud g.)	AD CAREFULL ding jobs, cementi
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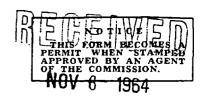
THE RESERVE TO App

Form No. 2 GENERAL RULES 201, 202, 213, 216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

го

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA BILLINGS OR SHELBY



OH AND GAS GUASERYATHUN GUMMISSIUM OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill	Subsequent Report of Water Shut-off
Notice of Intention to Change Plans	Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off	Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well	Subsequent Report of RECHERCO Repair (CSg.)
Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing	Supplementary Well History
Notice of Intention to Abandon Well	Report of Fracturing

Notice of Intention to Abandon	Well	Report of Fracturing		
(Indicat	e Above by Check Mark Nati	ure of Report, Notice, or Othe	r Data)	
		Nov	ember 4	, 1964
ollowing is a XXXXXXXXXXXXX (report of work do	on land	XXXXXXX described as fol	llows:	
report of work do.	10	LEASE Ea	st Poplar Uni	t No. 12
MONTANA	Rooseve	1t	Eas	t Poplar
(State)		(County)	(1)	Field)
ell No. EPU No. 12	SW SE Section 3	28N	51E (Range)	MPM (Meridian)
		1980 ft. from	-	•
OCATE ACCURATELY ON PLAT	· ·	· ·	•	
ne elevation of the derrick floor a	bove the sea level is			
EAD CAREFULLY	DETAILS OF P	LAN OF WORK	RE	AD CAREFULLY
(State names of and expected depths menting points, and all other important	to objective sands; show siz	e, weights, and lengths of pr	oposed casings; ind	icate mudding jobs,
menting points, and an other important			izing, Fracturing.)	
	DETAILS RES	OF WORK ULT		
			50 D C	EIVED
			REC	EIVLD
•			N	JV 5 - 1964
				CONSTRUCTION OF ISSUE
	See Attached	Sheets	OIL AND GAS OF THE STATE	OF MONTARA - BILLING
·-			C.	
		•		•
oproved subject to conditions on	reverse of form	Company MURPHY	OIL CORPORAT	ION
ate 2000. 5, 1964	,	11114		
ate // / /		БУ 11.1.1		***************************************
50 11 2 - 7				

District Office Agent

Title

Address

P.O. Box 547

Poplar, Montana

NOTE:-Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

Perm 9-331 (May 1963) DEPAR	ITED STATES TMLNT OF THE INTE GEOLOGICAL SURVEY	SUBMIT IN T ICAT (Other Instruct. a on verse side)	Form approved. Budget Bureau No. 42-R1424. 5. LEASE DESIGNATION AND SDRIAL NO. BLM-A 029305-A
(Do not use this form for proj Use "APPLI	OTICES AND REPORTS posals to drill or to deepen or plu CATION FOR PERMIT—" for such		6. IF INDIAN ACCORDE OR TRIBE NAME
OIL GAS			7. UNIT AGREEMENT NAME
WELL WELL OTHER 2. NAME OF OFERATOR			8. FARM OR LEASE NAME
- MIDSUV ATL CADBADAMY			
3. ADDRESS OF VIEWARDS COMES AND	<i>ya</i>		9. WELL NO.
4. LOCATION of WELD (Report location See also space 17 below.) At surface	Population of the second secon	ny State requirements.*	RFULLO END TOOL, OR WILDCAT
	O'FEL-sec. 3		11. BEC. T. 1 T. OF BLE. AND SURVEY OR AREA
			SW SE Section 3,
14. PERMIT NO.	15. ELEVATIONS (Show whether	DF, RT, GR, etc.)	12 COUNT OF PARISH 18. STATE
			Rocsevelt Hontans
16. Check A	Appropriate Box To Indicate	Nature of Notice, Report, or	
NOTICE OF INT	ENTION TO:	SUBS	EQUENT REPORT OF:
TEST WATER SHUT-OFF	PULL OR ALTER CASING	WATER SHUT-OFF	REPAIRING WELL
FRACTURE TREAT	MULTIPLE COMPLETE	FRACTURE TREATMENT	ALTERING CASING
SHOOT OR ACIDIZE	ABANDON®	SHOOTING OR ACIDIZING	ABANDONMENT
(Other)	CHANGE PLANS	(Other)	alts of multiple completion on Well
	PERATIONS (Clearly state all pertin		mpletion Report and Log form.) tes, including estimated date of starting any tical depths for all markers and zones perti-
helic to this work.	cuonany drined, give adpadriace a	eations and measured and true ver	
U. S. GEOLOGICAL SURVEY RECEIVED			
NOV 5 1964	See Attach	ed Sheets	
	·		
18. I hereby certify that the foregoing	is true and correct	 	
SIGNED PRICEDAL SIGNED		ield Production Super	intendant Hovember 4,196
(This space for Federal or State of	mice ruse), P. JAMES ILLARY A. ODEN D	ISTRICT ENGINEER	NOV SE TOCA
APPROVED BY	TITLE		NOV 5 1964
CONDITIONS OF APPROVAL, IF	ANX:	·	
	**	D 0.1	\$ \$ \tau \tau \tau \tau \tau \tau \tau \tau

(SUBMIT IN QUADRUPLICATE)

TO

NOTICE THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

OF THE STATE OF MONTANA OF THE STATE OF SHELBY STATE OF MONTANA OF STATE OF STAT OIL AND GAS CONSERVATION COMMISSION 74 STATE OF MONT.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill	1	Subsequent Report of Water Shut-off
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement	xx_	Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing		Supplementary Well History
Notice of Intention to Abandon Well		Report of Fracturing

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

		***************************************	February 14	19.74
Following is a notice of inten	tion to do work on land	XXXXXXX described as f	ollows:	
TENTEDERINE	MHENNI	LEASE	East Poplar Un	it No. 12
MONTANA		Roosevelt	East P	oplar Unit
(State)		(County)	(F	'ield)
Well No12	SW SE Section 3	T28 N	R51E	
	(m. sec.)	(Township)	(Range)	(Meridian)
The well is located 660	ft. from $\left\{\begin{array}{c} XXX' \\ S \end{array}\right\}$ line and	1980 ft. from	E line of Sec	3
LOCATE ACCURATÉLY ON P	LAT ON BACK OF THIS FOR	M THE WELL LOCATION	N, AND SHOW LE	ASE BOUNDARY
The elevation of the derrick flo	or above the sea level is	2078' G.L.	·-•	
READ CAREFULLY	DETAILS OF P	LAN OF WORK	RE.	AD CAREFULLY
(State names of and expected decementing points, and all other impo	epths to objective sands; show sizertant proposed work, particularly a			icate mudding jobs,
	DETAILS	OF WORK		

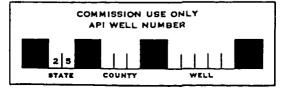
RESULT

It is proposed to acidize the B-1 & 2 perforations, 5614-22' and 5632-40', with 750 gallons of 15% HCL, 10% U-66 solvent, inhibitor and iron sequestering agent added. A casing leak occurred in this well in 1964. After the leak was repaired the fluid recovered from this well dropped from 190 BFPD to 130 BFPD. By acidizing the perforations the total fluid should be increased to what it was before the leak.

Approved subject to conditions on reverse of form	Company MURPHY OIL CORP
Date 7.8. 15 1974	By Wy Bren
Date July 15 1979 By District Office Agent Title	Title District Superin
District Office Agent Title	Address P.O. Box 547, P

ORATION tendent

59255 oplar, Montana



NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

Form 9-331 (May 1963)		JNITED STATES		SUBMIT IN T. LIC	ATE.	Form approv Budget Bure	ea. an No. 42-R14
DE		IENT OF THE I	•	(Other instructions o verse side)	5. I	EASE DESIGNATION	
		EOLOGICAL SUR				M-A-029305 F INDIAN, ALLOTTE	T-OP TRIBE NA
SUNDRY	Y NOTI	CES AND REPO	ORTS ON	WELLS	" '	The state of the s	a-or inibe has
(Do not use this form Use	for propose	als to drill or to deepen TION FOR PERMIT—"	for such propose	Bological Survey	Po	ort Peck	
OIL GAS			R	ECEIVED	7. 1	INIT AGREEMENT N.	AMR
AETT METT	OTHER			· D · A · A · A · A		st Poplar	
NAME OF OPERATOR			tt	EB 1 9 1974	l l	PARM OR LEASE NA	
Murphy Oil Corpor	ration		- 		9.	WELL NO.	Unit
P.O. Box 547. Por	nler M	iontana 59255	Billi	ngs, Montana	N	1. 12	
. LOCATION OF WELL (Report See also space 17 below.)	location cl	early and in accordance	with any State	•	10.	FIELD AND POOL, C	B WILDCAT
At surface				CSW SE	17.	SEC., T., E., M., OR	Doit AND
660' from the Son	uth lin	a and 1980' fr	rom the Ra			SURVEY OR AREA SE Sectio	• .
	<u> </u>					BN PSIR	
4. PERMIT NO.		15. ELEVATIONS (Show	whether DF, RT, Q	R, etc.)	12.	COUNTY OF PARISI	H 13. STATE
		2078' 0	G.L.		R	osevelt	Montan
B. (Check Ap	propriate Box To In	dicate Natur	e of Notice, Report,	, or Other	Data	. : *
NOTIC	B OF INTENT	TION TO:	l	. 8	тижиравни	REPORT OF:	
TEST WATER SHUT-OFF	P	TILL OR ALTER CASING		WATER SHUT-OFF		REPAIRING	WELL
FRACTURE TREAT	M	ULTIPLE COMPLETE	_	FRACTURE TREATMENT	<u> </u>	ALTERING (ABING
SHOOT OR ACIDIZE	~ −	BANDON*	_	SHOOTING OR ACIDIZIN		ABANDONME	INT*
REPAIR WELL	c	HANGE PLANS		(Other)	results of m	ultiple completion	on Well
(Other)		(0)		Completion or R	ecompletion	Report and Log for	orm.)
	is dissetion	nally deitiod oine subm	il pertinent det	ails, and give pertinent	dates, inclu	ding estimated da	te of starting
nent to this work.) *	is direction	nally driffed, give subsu	ll pertinent det urface locations	ais, and give pertibent and measured and true	dates, inclu vertical deg	ding estimated da	rs and sones pe
nent to this work.) *	is direction	nally drilled, give subsu	Trace locations	ana measurea ana true	vertical deg	tos for all marke	rs.an c son es pe
is proposed to ac	idize t	the B-1 & 2 per	rforations	o, 5614-22' and	i 5632-	40', with 7	50
is proposed to ac lons of 15% HCL,	idize t	the B-1 & 2 per	rforations	and measured and true 1, 5614-22 and 1 and 1 a	i 5632-4	40', with 7	50
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Form No.,2 GENERAL RULES 201, 202, 213, 216, 219, 230, 231, 232

(SUBMIT IN QUADRUPLICATE)

NOTICE
THE FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD. NOTICE

GENERAL RULES 201, 202, 213, 216, 219, 230, 231, 232		ro EEc	" 'PERMAIT W	RM BECOMES A HEN STAMPED BY AN AGENT
216, 219, 230, 231, 232, 232	5)	GAS CONSERVATION GAS OF MONTANA STATE	OS MANT.	OARD.
Story Story	NDRY NOTICES A	ND REPORT OF WELLS	State of the state	
Notice of Intention to Desti		Subsequent Report of Water	Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting		X
Notice of Intention to Test Water Shu	t-off	Subsequent Report of Alter		
Notice of Intention to Redrill or Repa		Subsequent Report of Redri		
Notice of Intention to Shoot, Acidize,	or Cement	Subsequent Report of Aban	donment	
Notice of Intention to Pull or Alter C	asing	Supplementary Well History		
Notice of Intention to Abandon Well		Report of Fracturing		
(Indicate Abo	ve by Check Mark Na	ture of Report, Notice, or Oth	er Data)	
		••••	April 5	19 74
L TEXAMETER PROPERTY AND THE PROPERTY PROPERTY AND THE PROPERTY PROPERTY AND THE PROPERTY PRO	**************************************	i www.i		,
Following is a report of work done	on land	leased described as for	ollows:	
	•		ast Poplar Unit	No. 12
	Po	ocevel+	Fact Ponlar	linit
MONTANA (State)	RO	(County)	(Fig.	eld)
•		•	•	•
Well No. 12 SW SE	Section 3	(Township)	(Range)	MPM (Mosidian)
The well is located 660 ft. fro	$m \left\{ \begin{array}{c} \mathbf{A} \mathbf{X} \\ \mathbf{S} \end{array} \right\} line \; and \;$	ft, from	line of Sec	
LOCATE WELL SITE ACCURATELY OF	N PLAT ON BACK	OF THIS FORM.		
The elevation of the ground or K.B. above		_		
The elevation of the ground of K.B. above	the sea level is	2070 3.13		
READ CAREFULLY	DETAILS OF E	PLAN OF WORK	REA	D CAREFULLY
(State names of and expected depths to obj				
important proposed work, particularly all deta	ils of Shooting, Acidiz	ing, Fracturing.)	sea casings, cementing	points, and an other
	DETAILS	OF WORK		
		SULT		
The B-1 & 2 perforations at of 15% HCL acid with 75 gall gallons of A-170 Iron Seques	ons of U-66 So	lvent, 20# L-41 Cor	idized with 750 rosion Inhibito	gallons or and 6
Mandan in Mada and	- Doto	1/2 BPM		
Maximum Injectio		1/2 BPM		
Minimum Injection		2800#		
Maximum Pressure Workover Potential: 6 Hr. I			23 BOPD 112	BWPD
83% W.C.				• .
Approved subject to conditions on rever	so of form	Company Murr	phy Oil Corpora	ntion
Approved subject to conditions on rever	se of totu	Company Mur	ATT OUTPUT	
Daye 4		By 21/28/B	rower	
J Chalk In	A.	District S	Superintendent	
District Office Agent	Title	Title Discrict	F	
		AddressP. O. Box	547, Poplar, N	iontana 59255
BOARD USE ONLY API WELL NUMBER	NOTE:—Reports on the	is form to be submitted to the	appropriate District for	approval

COUNTY STATE WELL

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED. OVER 66

	GEOLOGICAL SUR	INTERIOR (Other Instruct. on	RT May 20000	
SUNDRY	NOTICES AND REPO	ORTS ON WELLS	6. IF INDIAN, ALLOITE	E OR TRIBE NAM
		or plug back to a different reservoir. for such proposals.)	Fort Peck	
OIL TY GAS		U. S. Geological Servey	7. UNIT AGREEMENT N	
WELL WELL	OTHER	U. SEESEIVED	Bast Poplar	
turphy Oil Corpora	tion	1974	East Poplar	• 1
ADDRESS OF OPERATOR		APK 3	9. WELL NO.	;
P.O. Box 547, Popl	er, Montana 59255 location clearly and in accordance	with any State requirements.	No. 12	OR WILDCAT
See also space 17 below.) At surface		with any State requirements.	Rast Poplar	
			11. SEC., T., B., M., OR SURVEY OR ARE	BLK. AND
	h line and 1980' fro	m the East line	SW SE Section	on 3,
Section 3	15. BLEVATIONS (Show	whether DF, RT, GR, etc.)	12. COUNTY OR PARISE	13. STATE
		2078' G.L.	Roosevelt	Montan
e. Cl	neck Appropriate Box To In	dicate Nature of Notice, Report,	or Other Data	
NOTICE	OF INTENTION TO:	នប	BSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	PULL OR ALTER CASING	WATER SHUT-OFF	BEPAIRING	WELL .
FRACTURE TREAT SHOOT OR ACIDIZE	MULTIPLE COMPLETE ABANDON®	PRACTURE TREATMENT	ALTERING O	
BEPAIR WELL	CHANGE PLANS	SHOOTING OR ACIDIZING (Other)	ABANDONME	
	-			20 30 - 33
(Other) 7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.)	LETED OPERATIONS (Clearly state a ls directionally drilled, give subsu	(NOTE: Report re Completion or Red Il pertinent details, and give pertinent d urface locations and measured and true v	sults of multiple completion completion Report and Log fo lates, including estimated da ertical depths for all marker	orm.)
7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) *	is directionally drined, give subsu	Completion or Rec	completion Report and Log for lates, including estimated da ertical depths for all marker	orm.) te of starting a and sones pe
7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) * The B-1 & 2 perform of 15% RCL acid with the second	ations at 5614-5622	Completion or Recompletion or	completion Report and Log for lates, including estimated da ertical depths for all marker depths for all marker depths.	orm.) te of starting s and sones pe
7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) * The B-1 & 2 perform of 15% HCL acid with a sellons of A-170 In the sellons	ations at 5614-5622' th 75 gallons of U-6 ron Sequesting agent	Completion or Recompletion or	completion Report and Log for lates, including estimated da ertical depths for all marker depths for all marker depths.	orm.) te of starting s and sones pe
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7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) The B-1 & 2 perform of 15% HCL acid with gallons of A-170 In Maximum Minimum	ations at 5614-5622' th 75 gallons of U-6 ron Sequesting agent	end 5632-5640 were aci 6 Solvent, 20# L-41 Corr added. 1/2 BPM	completion Report and Log for lates, including estimated da ertical depths for all marker and the control of th	orm.) te of starting and sones pe
7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) * The B-1 & 2 perform of 15% HCL acid with gallons of A-170 In Maximum Minimum Maximum Maximum	ations at 5614-5622' th 75 gallons of U-6 ron Sequesting agent a Injection Rate a Injection Rate a Pressure	Completion or Recompletion or	completion Report and Log for lates, including estimated da ertical depths for all marker depths for all marker discountry. Addized with 750 gas cosion Inhibitor	te of starting s and sones po
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7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) * The B-1 & 2 perform of 15% HCL acid with gallons of A-170 It Maximum Minimum Maximum Maximu	ations at 5614-5622' th 75 gallons of U-6 ron Sequesting agent a Injection Rate a Injection Rate a Pressure	Completion or Recompletion or	completion Report and Log for lates, including estimated da ertical depths for all marker depths for all marke	te of starting s and sones po
7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.)* The B-1 & 2 perform of 15% HCL acid with gallons of A-170 In Maximum Minimum Maximum	ations at 5614-5622' th 75 gallons of U-6 ron Sequesting agent a Injection Rate a Injection Rate a Pressure : 6 Hr. Test Pumpa	Completion or Recompletion or	completion Report and Log for lates, including estimated da ertical depths for all marker depths for all marke	te of starting s and sones po
7. DESCRIBE PROPOSED OR COMP proposed work. If well nent to this work.) The B-1 & 2 perform of 15% HCL acid with gallons of A-170 It Maximum Minimum Maximum	ations at 5614-5622' th 75 gallons of U-6 ron Sequesting agent a Injection Rate a Injection Rate a Pressure : 6 Hr. Test Pumpe	Completion or Recompletion or	completion Report and Log for lates, including estimated datertical depths for all marker disconsistent of the latest depths for all marker disconsistent of the latest depths for all marker disconsistent depths for all marker disconsistent depths for all marker disconsistent depths for all marker disconsistent depths for all disconsistent depths de	te of starting and sones pe

Form 9-331 (May 1963)	UI ED ST	ATES	SUBMIT IN TRII ATI (Other instruction of instructio	Form approved Budget Bureau	1 No. 42-R1424.
ייט	GEOLOGICAL		(IOR verse side)	_	
CLIVIDD			ON MELLO 1 C. 101	BLM-A-029305	
	for proposals to drill or to "APPLICATION FOR PERM	deepen or plug IT—" for such	ON WELGE al Survey back to a different reservol proposals. FIVED	Fort Peck	الإجمعين
L. OIL GAS G			1076	7. UNIT AGREEMENT NA	
WE'L WELL .	OTHER		AUG 11 1976	8. FARM OR LEASE NAM	
urphy Oil Corpora	rt on		Billings, Montana	East Poplar	
. ADDRESS OF OPERATOR			prin-5 .	9. WELL NO.	DALE
.O. Box 547, Pople	ar, Montana 5925 location clearly and in acco	5 rdance with an	v State requirements •	No. 12	WILDCAT
See also space 17 below.) At surface			, and requirements		
601 from the Sout	11ne and 1980'	from the	East line	11. 8BC., T., B., M., OB BI SURVEY OR AREA C SW SE Sect	LK. AND
				T28N, R51K	ton 3,
4. PERMIT NO.	15. ELEVATIONS	(Show whether	DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
	207	8' G.L.		Roosevelt	Mont an
3.	heck Appropriate Box	To Indicate	Nature of Notice, Report, or	Other Data	
NOTIC	OF INTENTION TO:		SUBS	EQUENT REPORT OF:	
TEST WATER SHUT-OFF	PULL OR ALTER CA	sing	WATER SHUT-OFF	BEPAIRING W	MILL TO
FRACTURE TREAT	MULTIPLE COMPLET		PRACTURE TREATMENT	ALTERING CA	
SHOOT OR ACIDIZE	ABANDON®		SHOOTING OR ACIDIZING	ABANDONMEN	т•
REPAIR WELL	CHANGE PLANS		(Other)		
(Other)			(NOTE: Report resu Completion or Recor	lts of multiple completion on apletion Report and Log for	m.)
ogether with the	B-3 Zone (5655-56	60') and	Zone, perforate the test. Then isolate These zones will be	all B Zones and	per-
xpected daily prof f 38 BOPD.	duction of 650 BF	PD, 590 1	BWPD, 60 BOPD. This	would give an in	crease
	-				
	•				
3. I hereby certify that the f	oregoing is true and correct				
SIGNED Esty	~ ~ / //		District Superinten ds	nt DATE Augu	st 10, 19
(This space for Federal or	State office user		DISTRICT ENGINEER		
APPROVED BY	gilt Pauli	TITLE	APPLUIO FLORES SERVICE	DATE <u>8-//</u>	1-76
CONDITIONS OF APPRO					

(SUBMIT IN QUADRUPLICATE)

TO

NOTICE THIS FORM BECOMES A REEMIT WHEN STAMPED ARPBOVED BY AN AGENT OF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off
Notice of Intention to Change Plans	ļ	Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well	<u> </u>	Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing		Supplementary Well History
Notice of Intention to Abandon Well	Ì	Report of Fracturing

	(Indicate Above by Check Mark Na	ture of Rep	ort, Notice, or Ot	her Data)		
		***	······································	A	igust 10	0	, 197.6
Following is a motice of in	ntention to do work on land	JXXXXXX leased	described as	follows:			
			LEASE	East	Poplar	Unit 1	No. 12
MONTANA	. Ro	osevelt		East	Poplar	Unit	
(State)		(County)				(Field)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Well No. 12	SW SE Section 3 (m. sec.)		T28N		251E		MPM
	$0 \qquad \text{ft. from } \begin{cases} XXXX \\ S' \end{cases} \text{ line and }$						
LOCATE ACCURATÉLY O	N PLAT ON BACK OF THIS FO	RM THE W	ELL LOCATIO	N. ANI	SHOW 1	LEASE P	ROTINDARY
	c floor above the sea level is						,
READ CAREFULLY	DETAILS OF I	PLAN OF	WORK		3	READ C	AREFULLY
(State names of and expect cementing points, and all other	ed depths to objective sands; show s important proposed work, particularly	ize, weights.	and lengths of	proposed cidizing.	casines: i	indicate n	
	_	OF WOR	К				
together with the B	et a packer below the B- -3 Zone (5655-5660') and A-4 Zone (5501-5503').	test.	Then isolat	e all	B Zones	and r	er-
Expected daily produced of 38 BOPD.	uction of 650 BFPD, 590	EWPD 60	BOPD. This	would	d give a	an inci	ease
		·					
Approved subject to condit	ions on reverse of form	Comp	any MURPH	YOIL	CORPORA	ATION	····
Date August 11,1	1974)	Ву	Jany E	2.94	aff		
By Jelon &	Sul P.E.	Title	District	Super	intender	nt	***************************************
District Office	Agent Title	Aitie	ח ח פ	~ 5/17	Poplas	- Most	ana 592
		Addre	ess1 • 0 • B0	A 24/	Tobia	, FIORE	.aua



NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER



Form No. 2

GENERAL RULES 201, 202, 213, 216, 219, 230, 231, 232

(SUBMIT IN QUADRUPLICATE)

TO

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

BOARD OF OIL AND GAS CONSERVATION

BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

······································	Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans	Subsequent Report-of Shooting,-Acidizing, Cementing	<u> </u>
Notice of Intention to Test: Water Shut-off	Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well	Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing	Supplementary Well History	
Notice of Intention to Abandon Well	Report of Fracturing	

Notice of Intention to Full of After Cash	ing	Supplementary Wen Hi	swr)	1
Notice of Intention to Abandon Well		Report of Fracturing		
٠,			-	
(Indicate Above	by Check Mark Nat	ure of Report, Notice, or	Other Data)	 :
			September 22	19.76
		444/		13
ollowing is a report of work done	on land	described	as follows:	
freport of work done)	Dezeel)	East Poplar Uni	- No. 12
			reprint ohter mar.	L
MONTANA	Roose		East Poplar	
(State)		(County)	•	eld)
Well No. 12 SW SE Section	3	T28N (Township)	R51E	MPM
(m.	sec.)	(Township)	(Range)	(Meridian)
The well is located 660 ft. from	XXX line and	1980 ft. from	line of Sec	3
· ·	- ,) AMA I	
OCATE WELL SITE ACCURATELY ON F				
The elevation of the ground or K.B. above to	he sea level is	2078, G.T.	*******************	
TAD CADDULLY				
EAD CAREFULLY	DETAILS OF F	LAN OF WORK	REA	D CAREFULLY
		OF WORK SULT		
<u>.</u> ,		JOHI	22212	
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	*		DIL & GAS COM	MONT.
•	See Attac	hed Sheet	STATE OF	153
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			4016	المعتقباة
			•	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
approved subject to conditions on reverse	of form	CompanyMu	rphy Oil Corporat:	ion
SEP 2 3 1976		· ·	N 42 - 0 -	/
)ate 3CF 43 1310		By Green	Jameleal	<u></u>
34 Olain J. Namber Sien	· ·	Title Distri	ct Superintendent	•
District Office Agent T	itle		***************************************	
• V		A D . O	Por 5/17 Poplar 1	Vantana 5029

BOARD USE ONLY
API WELL NUMBER

2 5
ETATE COUNTY WELL

Address P.O. Box 547, Poplar, Montana 59255

NOTE:-Reports on this form to be submitted to the appropriate District for approval

WHEN USED AS PERMIT TO DRILL. PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED.

OVER-



Perforated the B-3 at 5655-5660' and the B-4 at 5693-5698'. Acidized the perforations with 250 gallons of RA-8 with 2 gallons A-170 inhibitor and 1 gallon of W-27 demulsifier added. Pumped into formation at 3/4 BPM with 1400 PSI - 1400 PSI 15 Min. SIP 600 PSI. Very little fluid movement.

Re-acidized the B-3 perforations with 500 gallons of 15% BDA acid with 5 gallons A-170 inhibitor and 15# L-41 iron sequestering agent added. ISTP 1200# 15 Min. SIP 400#. Still very little fluid movement.

Treated the B-1, 5614-22', B-2, 5632-40', and B-3, 5655-60' with 5,000 gallons of HOWCO Mod 202. Also treated the B-4 Zone, 5660-5655', with 3,000 gallons HOWCO Mod 202. Run Reda in well - not enough fluid to keep pump running. Pulled and ran rod pump. Pumping at the rate of 285 BFPD 250 BWPD 35 BOPD 88% W.C. Workover Potential.

		5. 4DASE DESIGNATION AND SEE 20 40 6
		6. IF INDIAN, ALLOTTEE OR TRIBE NAME OF POUR BL M. W.C. Fort Peck
OTHER	U. S. Geological Surv	_ East Poplar Unit
poration	SEP 23 1976	East Poplar Dnit
Poplar Montana 59255 t location clearly and in accordance with	any State reBillings, Montana	No. 12 10. FIELD AND POOL, OR WILDCAT
South line and 1980' fro	om the East line	Rast Poplar Unit 11. SEC., T., E., M., OR BLE. AND SURVEY OR AREA C SW SE Section 3,
15. ELEVATIONS (Show wheth	er DF, RT, GR, etc.)	12. COUNTY OR PARISH 13. STATE
2078' G.L.		Roosevelt Montana
PULL OR ALTER CASING MULTIPLE COMPLETE ABANDON* CHANGE PLANS	SUBS WATER SHUT-OFF FRACTURE TREATMENT SHOOTING OR ACIDIZING (Other) (NOTE: Report resu Completion or Reco	REPAIRING WELL ALTERING CASING ABANDONMENT* alts of multiple completion on Well mpletion Report and Log form.)
e B-3 at 5655-5660' and tons of RA-8 with 2 gallor dinto formation at 3/4 F. Very little fluid movement by the B-3 perforations with or and 15# L-41 iron sequential very little fluid movement. -1, 5614-22', B-2, 5632-4202. Also treated the B-	the B-4 at 5693-5698', as A-170 inhibitor and BPM with 1400 PSI ISINGENT. 500 gallons of 15% BDM mestering agent added. ovement. 40', and B-3, 5655-60'-4 Zone, 5660-5655', wi	Acidized the perforations 1 gallon of W-27 demulsific P - 1400 PSI 15 Min. A acid with 5 gallons ISIP 1200# 15 Min. with 5,000 gallons ith 3,000 gallons HOWCO
	EPARTMENT OF THE INTIGEOLOGICAL SURVEY Y NOTICES AND REPORT of proposals to drill or to deepen or place "APPLICATION FOR PERMIT—" for su OTHER Poplar Montana 59255 It location clearly and in accordance with South line and 1980' from 16. ELEVATIONS (Show wheth 2078' G.L. Check Appropriate Box To Indicate The Complete Box To Indi	EPARTMENT OF THE INTERIOR (Other Instructions on GEOLOGICAL SURVEY Y NOTICES AND REPORTS ON WELLS In for proposals to drill or to deepen or plug back to a different reservoir. W. S. Geological Survey U. S. Geological Survey There There are the control of t

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18. I hereby certify that the foregoing is true and correct						
ORIGINAL SIGNED BY	TITLE _	District Superintendent	DATE	September	17,	Ļ
(This space for Federal or State office use) APPROVED BY	TITLE _	DISTRICT ENGINEER	DATE	9-30-7	4	

API # 25 = C8 3 0 5049 Judget Bureau No. 42-R355.; AVAILABLE Approval expires 11-30-49.

Form	9-590 51 E			A					•
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Size	3 J. Weight 7	Threads per 2	Make	- Ambant	Kind of shoe	Cắt and pútled No		rated	CG. Purpose
casing	per loot	- men					Prom-	To-	
.o3.∕8	carde Musa	r bridges were	put in to te	ai 127 biei	, state kind of n	aterial-used,-posi	i a), and resu	عمر عدس	Conductor
	he <u>rensons (b</u> macred '' or le	r che Work and (ten 244 Well,	hs results.	1000	Were 31/2 thang	s made in the cases as been dynamited	ing, state (a) Invegate, s	F. and if	ant Casing Was
	ris Compares	test importanc	IN THE RESIDENCE		BLOP HOCK NO.	 Dleuso-siate-in	- <u>-iptoji 411-2-n</u> a	e-əi-reda	Histor : conting
·			Hi	STORY (OF OIL OR	GAS WELL			Addition Obbits.
			MUDD	ING AN	D CEMENT	NG RECORD			
Size casing	Where set	Numbe	er sacks of cen	nent	Method used	Mud gravity	Ar	n lo lawa	ud used
3/8	121	8 vds.	Remix.	Ili Idea	1 By hand				
3/8	10191	400		t t	ump & Plug				********************************
-5/B	770	200		P	ump & Plug	,			

	-								pth set	
Adapters-	-Ma	terial		}	. Siz	.е	•	**************		
		ļ		SHO	TOC	NG R	ECORD			
Size		he ll used	Exp	losive used	Qu:	ntlty	Date	Depth shot	Depth deaned o	ut
				Jet	·2··t×	r-ft.	11-14	5793-5799	Ç	
				jet	h-p	r-ft.	-11-18	5682-5640	B	
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5		, ,		•		LS US			• •	
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Cable tools	we	e used fro	m	fee	t to	 	feet,	and from	feet to	feet
						PATES				
			,	19		Pu	t to prod	lucing Decar	ber 5	, 19.52
The pr	rodu	ction for t	he first	24 hours was	100	:			8.2 % was oil;	-
				% sedimen				•	б	
•				i		0.11	,			
lf gas	well	, cu. It. pe	er 24 hou	T S		Galle	ons gasol	line per 1,000 c	u. ft. of gas	
Rock p	pres	ure, lbs. p	er sq. in	! !		i				
	.1	K Danie	_	.	EMF	LOYE				
	- 1			Driller		•	X	E. Harlan		., Driller
	Joh	n Carret	.t	Driller						, Driller
						ON R	ECORE)		
PROM-		то	-	TOTAL FEE	т			PORMA1	TON	
			r.	rmation To		·		***************************************		
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			}	5794		C Zon	38 R			
	}									

(OVER)

LOG OF OIL OR GAS WELL

E.P.U. # 12 (continued)

Week ending November 21, 1952

Perforated open hole from 5793 to 5799 with 2 shots per foot; Tested "C" Zone from 5790-5800. Tool open for 9 hours, closed 20 minutes; good blow throughout; gas to surface in 16 minutes. Recovered 218' mmd, heavily cut with oil and gas; 212' mmddy salt water (chl. 18,000 ppm.) IBHFP: 0 FBHFP: 75# BHSIP: None Hydro: 3175# Acidized "C" Zone with 1000 gallons; cleaned well into pits. Well flowed 24 barrels of 42.2 gravity oil (corr.) and 9 barrels salt water (chl. 75,000 upm) in 9 hours on 10/64" choke. Gas from same zone estimated at 750,000 cu. feet per day, open flow. Killed flow from "C" zone. Set a Model "D" Baker Production Packer at 5770. Set a blind Baker Seal Nipple in packer. Perforated B-2" zone from 5632 to 5640 with 4 shots per foot. Tested perforations for 5 hours with Johnston Tool. No fluid to surface, so swabbed with tool in hole. Found fluid in hole at 3300'. Swabbed tubing dry in 4 trips. Recovered oil with 5% water. Attempted to acidize through test tool with 500 gallons; established communication between tubing, $5\frac{1}{2}$ " casing, and 9 5/6" casing. Tested casing for leak with Baker Pressure Tool. No leak could be found in either the 52" or 9 5/8" casing. Tested perforations with Pressure Tool. Found no evidence of channeling in cement. Oil and mud flowing from annulus between 51 casing and 9 5/8" casing. Gravity of oil is 39.4° (corr.). A re-run on Samples found shows of oil in both the Heath sand at 4850 to 4890 and the Kibbey Sand at 5130. Top of cement is estimated to be at approximately bbCO'. Acidized "B-2" Zone with 1000 gallons. Displaced acid at rate of 1 barrel per minute at 3200#. Formation did not break down. Flowed displacement of oil out in 16 minutes. Made 1 head of acid and died. Made preparations to swab, and started flowing before swabbing started. Flowed back acid water and oil. Cleaned into pits and turned into test tank. Flowei 2 barrels per hour, 30% water, on 1/6% choke. Flowed 55 barrels oil, and 3 barrels water in 13 hours, open flow. Now Flowing into test tank.

Week Ending November 28, 1952

Acidized "B-2" zone with 1000 gallons. Flowed 55 barrels oil and 3 barrels water in 13 hours, open flow. Swabbed 33 barrels oil and 10 barrels water in 6 hours. Fluid level lowered to 2000'. Flowed 14 barrels oil and 2 barrels water in 6 hours, open flow. Swabbed 48 barrels oil and 12 barrels water in 6 hours; fluid level lowered to 4000'. Flowed 29 barrels oil and 2 barrels water in 13 hours, open flow. Re-acidized "B-2" zone with 2500 gallons. Flowed and swabbed oil and water into pits. Turned into test tank. Flowed 2.5 barrels of oil per hour with 10% water.

Week ending December 5, 1952

Perforated "B-1" zone from 5614-5422 with 4 shots per foot. Tested perforations with packers set at 5605 and 5627. Tool open with strong blow. Gas to surface in 129 minutes; oil cut mid to surface in 279 minutes. Very slow but continuous flow of heavy oil cut mid and oil for 3 hours. Swabbed into pits, 50% water. Pulled tool out of hole, and went in hole with fishing tool to fish packer rubbers out of hole. Also fished blind seal nipple out of Baker Model "D" packer. Went in hole with tubing. Tubing perforated both above and below the production packer in order to flow all zones through the tubing. Displaced mid with oil and turned into tanks at 3:15 A.M., 12-3-52. Flowed 27 bbls. oil in 5 hours. Pumped 10.8# mid in annulus between 9 5/8" and 5 1/2" casing in order to kill flow of oil from some upper zones. Rig released at 11:00 P.M., 12-3-52.

	'Vell No. 3-A
C.H.Murphy Jr. et al	Two. 28 N.
E. Poplar Unit #12	Rge51 È.
Structure Poplar	Sec3
County	Location
Roosevelt	C SW SE
State	: 660 N/S
Montana	1980 W/E
Surface Elevation and	f Formation
2039 KB	
Landowner -	
E. Poplar Unit BLM	-A-029305-A
C.H.Murphy et al AP	1 \$ 250 050050
Drilling Company	<u> </u>
C.H.Murphy Jr et al	Î
Representative in Charge	
Contractor on Dailler	

Contractor or Driller

Final Result

Date Location Date Spudded 10-14-52 10-7-52 App 10-10-52 HHP) 10-17-52 rng. surface casing(FCP) 10-23-52 Drilling 3902, 968.931 of 9-5/8" w/ 400 sx (ETE (FCP) 11-7-52 Drilling 5700, DST A zone 5484-5504 open 2 hrs. no SI; weak blow; top packer failed after 2 hrs rec 120' free oil, 30' mud heavily c/w g & o; 30' mud lightly c/w o&g 90' salt water; 150' clean mud. FP 30#, no SI Hy 3050#; DST B 2 zone. 5632-44 open 4 hrs, SI 120 min, weak blow, rec 195' clean oil, 90' mud heavily c/w o & g; 150° mud c/w g, 30° m c/w water & 270° salt water: FP 300#, SI 2650#, Hy 3250#,
Completed Total Depth Formation 11-8-52 5800 Water Gas I.P. 150 BOPD

DST Bz 5630-37½ open 4 hrs, 3122 SI 20 min; rec trace free oil, :900 mud slightly c/w o & g, 210 mud, heavily c/w gas, slightly c/w oil, 150° salt water; FP 450#, SI 2800# Hy 3250#, Samp tops: Chas-Madison 5484; B 1 5617; B 2 5634; Greenhorn 2300; Piper sh. 4245; Piper lm. 4318 Amsden 4717, Kibbey Lm. 5270 (FCP) 11-14-52 Comp 11-8-52 TD 5800 (FCP) 11-21-52 DST 5790-5800, a/w 1000 gals, flowed 24 BO & 9 B. -salt water-1/64" choke, plus est-750,000 c.f. gas; killed well, set gpacker 5770, set Baker seal, sealin off hower zone, perf B2 zone 5632-40 DST 5632-40, open 5 hrs no fluid swabbed w/ tube in hole, mud and -mostly-oil, swabbed dry; attempted to acidize, would not take acid; pulled tool to look for leak in tog perforating & testing (FCP)

ll-28-52 5½" at 5778 w/ 200 sx.

Perf C zone 2 shots per ft treated w/ 1000 gals; flowed 211 B of 42.2 gr oil, 9 b s & w in 9 hrs thru

10/64 choke, gas est 750 Mcf. Perff

B2 5632-5640 w/ & shots per ft.

treated w/1000 gals, well flowed

2 BOPH 30% water on 1/8" choke,

flowed 55 E0 7 3 EW in 13 hrs. will

test Bl zone (FCP)

12-5-52 Perf 3 5614-22 w/ 4 shots;

DST straddle packers 5605-27 open
w/ weak blow 30 min, inc. to strong
blow 2 hrs, dead in 4 hrs. bottom pacer failed; reran test, packers same,

open strong blow, gas to surf 129 mi:
oil cut mud to surf two hrs. 79 min,
very slow but continuous flow of

heavy och & free oil for 3 hrs; swabbed into pits approx 50% wa flowing Bl 7 C zones 2 BFPH: testing (FCP) 12-16-52 $5\frac{1}{2}$ " at 5778 w/ 200 sx. testing (FCP) 9542.1 3-12-53 I.P. 150 BOPD (FCP) Structure Sec. 17.4 The state of the s S.ta -14-52 Tatal 111-5-51-10.75-1076 Tablidade

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ID SW SE Sec. 3-T28N-R51E
Location:
                                             Coring Indorvals:
                                            WE SHITE-ESTE Rec. 3/2 A-2. 3 & 4
            Spacing = LC acres
Elevation: 2078 Gr. - 2089 K.B.
                                            #2 5601-50hh Rec. 10 1 B-1 & 2
                                            #3 5710-5175 Rec. 314 C-1
Soudded:
             10-15-58
Completed: 12-3-52
                                            洲 5782-5792 Ren. 10/ C-2
T.D.:
            58027 Schl.
                                            约 5792-5000 Rec。 91 C-2
Prod. Zones. B.J. 5614-221; B-2 5632-40:
             0-2 open hole 5793-993
                                            Drill Stem Wests:
                                            DET #1 51134-5501 A-3 & 4. Op 2 hrow,
           Schlumberger Tops
                                                                                      DST #6 5630-5637 B-2 Op 4 hr, SI 20 min.
              Depth Datum
                               Thickness
                                            Si O. Rec. 120' free oil, 30' mud,
                                                                                      Rec. tr free oil, 900' mid, sl cut w/o
Judith River
               75h
                                            hvly o & g cut, 30' mud, lightly 0 &
                                                                                      & gas, sl cut w/oil, 150' s.w. chl.
                       +1335
                       - 245
                                            g cut, 90' s.w., chl. 62,000 ppm, 150'
                                                                                      52,000 ppm. IBHFP O FBHFP 450 BHSIP 2800
Creenhorn
               233L
Muddy Sd
              2899
                       ~ 810
                                            cln mud. IEHFP O FEMFP 50 No SIP, Hy-
                                                                                      Hydro 3250.
                      ~1023
                                                                                      DST #5 5788-5800 C-2 mis-run Op 4 hrs,
Dakota Silt
              3112
                                            dro 3050#.
                       -2250
                                            DST #2 5632-44 B-2 Op 4 hrs, Si 20 min.
Piper Ls
              1,339
                                                                                      SI 20 min. Rec. 1350' cln mud, 490' sl
                       -2633
Amsden
              ·1/22
                                            Rec. 195' cln oil, 90' mud hyly cut w/
                                                                                      o & g cut mud. No pressures. Found leak
                                            o & g, 150' mud w/ges, 30' mud out w/
Heath
            **4618 ·
                                                                                      in drl pipe.
                       -2729
              4980
                       -2891
                                            wtr. 270' s.w. chl. 82,000 ppm, IBHFP
                                                                                      DST #6 5790-5800 G-2, rs-run op 6 hr, SI
Otter
              5137
                      ~3078
                                            O FBHFF 300, BHSIP 2650#, Hydro 3250#.
                                                                                      20 min. Rec. 637' o & g cut mud, 1952'
Kibboy Sd
                                                                                      cln mid. IBHFP O FBHFP O No SIP Hydro
Kitboy Ls
              5276
                                            DST #3 5615-26 B-1, Op 4 hr. SI 20 min.
                       -3187
                                            Rec. 50' cln oil, 65' mud. hvly cut w/
Madison
              5370
                                                                                      3125#.
                       -3281
                                            cil & gas, 270' mud, cut w/o & wtr. 90'
                                                                                      DST #6 re-run, Op 9 hr SI 20. Rec. 218
A ~ J.
            ##5L66.
                       ~3377
                                   71.0
            ** 5180
                                   1, 5
                                            fluffy mud hvly cut w/ gas, oil & wtr.
                                                                                      O & G out mud, highly out w/oil, 212'
V--5
                      -0397
                                   50
                                            180' a.w. IBMFP O FBHFP 75 PHSIP 2500,
              51195
                       -3上06
                                                                                      muddy s.w. chl 18,000 ppm IBHFP O FBHFP
A--3
              550I
                      -31112
                                  305
                                            Hydro 3225#.
                                                                                      75 BHSIP O Hydro 3175.
Anle
B.-I
              5519
                      ~3530
                                   91
                                                                                      DST #7 (5800 attemptd test, mis-run, ra-
B-2
                      =35117
                                                                                      tact) Co 5 hrs symboled oil from 3300-
              5636
                                  131
B-3
            **5651;
                      --3565
                                  79
                                                                                    · 52001.
Bank
                                   53
                                                                                      DST #8 5614-22 Op h hr. B-1 zone. Bottom
            ##5393
                      -350h
33-5
              5729
                                                                                      pkr falled, re-run 5005-5627. Swebbed to
                      -3640
Cw.I
             *5771
                      -3685
                                                                                      pits. 50% utre
C-2
              5794
                      ~3705
                                            Eletory Subsequent to Completton:
  *#Probable prod, somes from DST stru-
                                            8-8-53: € some blanked off with Bridge Plug.
    ural position, etc.
   ₩Shоыз
      Drill Nips Corrections (Made)
      5483 Ind 1107 = 5670 315 (-131)
```

FAST POPLAR FILLS

Roosevell Lounty, Pertain

MURPHY CORPORATION

MAST POPLAR UNIT WELL NO. 12

LOCATION:

C SW SE Section 3, Torniship 28 North, Range 51 East,

Rocsevelt County, Montane

ELEVATION:

2078: Growed: 2089; K.B.

SPUDDED:

October 13, 1952

COMPLETED: ..

December 3, 1952

TOTAL DEPTH:

5800' Driller = 5802' Schlumberger

October 13: Spudded 10-13-52.

October 14: Set 47' 13-3/8" conductor pipe at 42' with 14 sacks

cement. Drilled to 1015'.

October 16: Ren Schlumberger ES. Set 961.93 of 9-5/8" casing at 973.58' with 400 sacks cement; plug down 3:00 a.m. 10-16.

312:20, Armi foo sacks cement? brug doan 3:00 g'ill' TO-TO

October 17- Drilled from 1015 to 51/73. Cut and pulled Core No. 1,

Movember 4: 5474-5512, racovered 34. Ran DST #1, 5484-5504

Movember 5-6: Drilled to 5601. Cut aid pulled Core No. 2, 5601-5644, recovered 41'. Ran DST #2, 5632-5644. Ran DST #3,

5615-5625.

November 7-8: Drilled to 5646. Ran DST #4, 5630-5638. Drilled from 5646 to 5740. Cut and pulled Core No. 3, 5740-5775,

recovered. Depth correction: 5775=5782 S.L.M. Cut and pulled Core No. 4, 5782-5792, recovering 10.

November 9- Cut and pulled Core No. 5, 5792-5800. Ran DST #5, 5788-

November 19: 5800 (mis-run). Ran Schlumberger ES and ML. Ran 57.78.10:

of $5\frac{1}{2}$ " casing; set at 5789.50' with 200 sacks cament. Plug down at 11:20 a.m. 11-10-52. T.D. Schl. 5802'.

Movember 11- Ran DST #5 again, 5790-5800'.

November 15:

Movember 16: Ran DST #6, 5790-5800. Retest. Remaining tests described

under "Completion Summary."

December 3: Rig released at 11:00 p.m. 12-3-52.

EAST POPLAR UNIT WELL NO. 12

DRILLING BIT RECORD

No.	Size	Type	Serial	Depth Ou	<u>Feet</u>	Hours
1	12-1/4	08035	Re-tip	1015	1015	
2	8-3/1;	CSCLi	68050	271:5	1730	17-3/4
3	8-3/11	CSC-J	62521	3380	645	11-1/2
4	8-3/4	OSCJ	62522	370 <u>1</u>	321	12
5	8-3/4	OSC-J	12954	1,020	319	11:
6	8=3/1;	CSC-J	12959	1,380	360	11:-1/2
7	8-3/4	osc—j	62521	451.3	133	1/1
8	8-3/4	20V:H	Reed	. 4526	13	Ļ
9	8-3/4	CSQ2	62702	L695	169	14
10	8-3/4	0263	62675	4907	212	16 .
13.	8-3/4	.0802	62700	1,962	55	4-1/2
12	8-3/4	OM ·	35717	5105	143	. 15
13	8-3/4	OME	68510	5262	157	
功	8-3/4	OFL	68山7	5378	116	16-1/2
15	8=3/L;	O₽₫∇	811,25	51,70	92	9
	7-7/8	Chris		5512	42	
16	7-7/8	OFS	76228	5600	83	74.+3/4
	7-7/8	Chris		2917	لنابا	
17	7-7/8	Olago.	18081	रश्ग	(Condition	Ecle)
	7-7/8	01:5	Rerun	5646	2	
	7-7/8	CIS	Retrun	5690	34	
	77/8	0145	Rerun	569?	17	
18	77/8 77/8 7 7/8	2HM Chris OHS	Reed rerun	5740 5800 5800	તિ 60 (Condition	5-1/2 Hole)

Note: The above information was obtained from Hughes Tool Company

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EAST POPLAR UNIT WELL NO. 12

DIAMOND CORE BIT RECORD

Date	Core	Diamond Bit No.	Size	From	70	Fcotage	ñec,	Remarks
10-31	2.	F-1869	77/8़	5474	5512	38	33	Shoje
11 3	2 .	F-1869	7-7/8	5601	56114	43	143	Show
11.4 6	3	F-1869	77/8	5740	5775	35	37	No Show
11,- 8	4	F-1869	7-7/8	5775	5785	0 <i>.</i> ;	30	No Show

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger	
Electrical Survey	80' - 5801'
Detail	50001-58011
Microlog	50001-57991
Lane-Wells Gamma-Ray Neutron Log	5400'-5769'

LOG TOPS

	Depth	Datum	Tri ckness
Eagle Niobrara Carlile Greenhorn Graneros U. Muddy Nuddy Sand Dakota Silt Morrison Rierdon Piper Shale Piper Is, Gypsum Sprgs Spearfish Amsden Reath Otter Kibbey Kibbey Is. Medison A-1 A-2 A-3 A-1 B-1 B-2 B-3 B-1 B-5	Depth 1150 1987 2135 2334 2688 2899 3112 3590 4390 4585 4782 4818 4980 5137 5276 5466 55619 56619 56619 56729	Datum + 939 + 102 - 46 - 245 - 145 - 599 - 810 -1023 -1426 -1813 -2173 -2250 -2301 -2496 -2633 -2729 -2391 -3048 -3187 -3281 -3537 -3565 -3604 -3640	Tri ckness 4: 4: 5: 30: 90 13: 7: 5: ?
C-1 C-2	5774 5794	-3685 -3705	?

CORE DESCRIPTIONS

en announcement of the state of

Middle description of the second of the seco

Core No. 1

5474-5512

Rec. 34:

- C. T. 8, 9, 9, 9, 14, 12, 13, 13, 9, 14, 15, 15, 16, 11, 18, 13, 19, 22, 22, 22, 20, 15, 17, 14, 11, 24, 15, 11, 11, 17, 13, 11, 22, 23, 20, 15, 39, 40
- Dolomite, light gray, earthy dense to very poor porosity, medium soft. No show.
- Anhydrite, gray, fine crystalline, dense, gypsiferous, medium soft, numerous very thin irregular shale partings.
- Anhydrite, light gray, fire to medium crystalline, soft. No show.
- 71 Limestone, dark gray, amouphous, very hard and dense, except
 41 for numerous short, tight, irregular fractures, some vuggy
 porosity along fracture planes, some free oil bleeding from
 along fractures; fair golden-yellow fluorescence along fractures,
 ture planes and in vugs; fair oil odor and stain along fractures.
- Jien Limestone, dark gray to black, amorphous to microcrystalline, medium hard, dense; numerous thin black shale partings; occasional short, very tight, incipient vertical fractures; very slight oil cdor and stein along fractures; weak, spotted, dull yellow fluoresecance along fracture planes.
- Limestone, light gray, fire crystalline, medium soft, dense except for numerous very short, irregular, tight fractures; some free oil bleeding from along fractures, fairly even, milky white fluorescence along fracture planes; fair oil odor and taste along fracture planes; all show in fractures.
 - 2' Limestone, dark brownish-gray, medium crystalline, medium soft,
 fair intercrystalline porosity, fair permeability; numerous very
 small calcite crystals scattered throughout; slight sulfurous
 cdor on fresh break; entire unit looks wet. No show.
 - 2: Limestone, dark gray, microcrystallire, very hard, dense, except for numerous very thin tight, vertical fractures. No show in mass of core or along fracture planes.
 - Limestone, dark gray, very highly broken up and ground up by bit, crystallinity or show cannot be determined, due to grinding up of core. No fluorescence or oder.

Analysis run on Bottom 241.

Core Ro. 2

5601-5644

Rec. 411

- C. T. 22, 5, 5, 5, 5, 8, 12, 17, 15, 12, 16, 15, 16, 14, 14, 11, 8, 8 16, 14, 7, 5, 4, 7, 13, 10, 13, 15, 14, 15, 10, 14, 11, 6, 4 5, 5, 6, 10, 11, 7, 7, 7
 - 6" Delemite, very anhydritic, medium gray, fine crystalline, medium hard, dense, No show.
 - 69 Salt, clear, amorphous. No show
- Anhydrite, light gray, fine crystalline, medium hard, dense; occasional black shale partings; one foot zone of large vugs, due to solution of salt one foot from top of unit. No show.
- J' Limestone, light to medium brownish-gray, fine crystalline, earthy; fairly porchs and permeable with occasional short, very tight, vertical fractures; numerous aclcular calcite crystals; fair oil stain and cdor; medium golden-yellow, spotty, fluorese cence along fracture planes and in mass of core.
- Limestone, light brownish-gray, amorphous, dense, except for numerous very thin, very night vertical fractures, the fractures being filled with calcite crystals; numerous black, stylolitic partings; fair oil odor and taste with medium golden-yellow, fairly even fluorescence along fracture planes.
- Limestone, medium brownish-gray, fine to medium crystalline, earthy, fair porceity and permeability with occasional short, tight, vertical fractures. Numerous calcute crystals along fracture planes and in mass of core; occasional black, stylolitic partings; good oil stain, odor and taste; some bleeding of oil one foot from top of unit; medium golden-yellow, fairly even to spotty fluorescence along fracture planes and in mass of core. Bottom 3 feet of unit looks wet.
- Anhydrite, light gray, fine crystalline, hard, dense. Slightly calcareous in top becoming very calcareous and highly brecciated and fragmental in bottom one foot. Bottom one foot approximately 50 percent limestone, 50 percent anhydrite. No show.
- Limestone, light to medium brownish-gray, fine to medium crystelline, earthy, fairly hard; several zones of hard, dense, darker limestone, 1-10 thick; numerous black, stylolitic partings and numerous calcareous crystals throughout unit; good porosity and permeability in top 2 feet of unit with fair to poor porosity and permeability in remainder of unit. Occasional to numerous short, tight, vertical fractures cemented with calcite in top 2 feet; numerous tight, uncemented, vertical fractures in remainder of core with bottom 3 feet of unit fairly broken up. Good oil stain, cdor, and taste with some bleeding of oil in top 2 feet of unit, the rest of the unit having a salty tasts. Fluorescence is medium, golden-yellow, fairly even in top 2 feet with weak, golden-yellow, spotty to streaked fluorescence in remainder of unit.

Core No. 3

Depth Corrs 5775=82 5740-5775

Rec. 37:50

- 0. Te 15, 22, 25, 20, 21, 20, 16, 23, 20, 17, 15, 15, 19, 17, 16, 19 20, 18, 17, 19, 25, 14, 15, 16, 16, 16, 14, 11, 11, 11, 11, 13, 13, 15, 9, 15
 - Anhydrite, light gray, medium granular, dense, fairly hard, with inclusions of light brownish-gray, medium crystalline limestone. No show.
 - Limestone, medium gray, fine crystalline, dense, hard, with occasional inclusions of white anhydrite. No show.
 - Polomite, dark brownish-gray, fine crystalline with thin bands of medium crystalline, hard, dense, numerous very thin streaks of black shale. We show.
 - Limestone, very dark brownish-gray, very fine crystalline, hard, dense, few very tight hairline vertical fractures demented with calcite, increasing to 1/16" wide in bottom 2' of unit, occasional black shale partings. No show.
 - 6.5" Dolomite, medium brownish-gray, fine crystalline, hard dense, more calcite toward base of unit. No show.
 - 2'6" Limestone, very derk gray, fine crystalline, dolomitic in top one foot of unit, hard, dense. No show.
 - Delemite, medium brownish-gray, fine crystalline, hard, dense, very few vertical hairline fractures, camented with calcite. No show.
 - 7' Limestone, very dark brownish-gray, dense to medium crystalline, fairly hard, dense, slightly argillaceous; a few very thin, tight, vertical fractures filled with calcite, numerous fairly large calcite crystals in bottom 3 feet of unit, occasional black, stylenlitic partings. Me show.
 - Limestone, light gray, very fine crystalline, fairly hard, dense; very shaley (black) in top 3 in. and bottom 2 inches of unit, occasional short, tight, vertical fracture cemented with calcide.
 - 5.60 Delomite, medium to dark brownish-gray, fine crystalline, danse, hard, with numerous thin streaks of black shale, ecoscional short, vertical hairline fracture filled with calcite in bottom one foot. No show.
 - 2: Limestone, medium to brownish-gray, firs-medium crystalline, medium bord, very slightly percus; obespicael very blin short, tight, verbical fracture filled with calcite; slight oil cdor.

Core No. 4

5782-5792

Rec. 10'

- C. T. 46, 24, 25, 25, 25, 20, 15, 15, 15, 15
 - 3" Limestone, dark brownish-gray, very fine crystelline, fairly hard, dense, with occasional streaks of black fissile shale.
 No show.
 - Dolomite, light gray, fine crystalline, very hard, dense with some small calcite crystals. No show.
- 8:9" Limestone, light to dark brownish-gray, fine to medium crystalline, very hard, dense. Numerous thin black shale partings; and occasional irregular bands of calcite crystals in top 2 feet of unit. Occasional thin to hairline, short, tight, vertical fractures cemented with calcite in remainder of unit. No show.

Core No. 5

5792-5800 ·

Rec. 97

- C. T. 16, 13, 15, 8, 7, 8, 5, 6
 - 3: Limestone, light brownish-gray, micrc-to-fine crystalline, medium hard, dense, except for occasional thin vertical hairline fracture; occasional black stylolites, faint sulfurous odor on fresh break. No show.
- Limestone, dark brownish-gray, fine to medium crystalline, medium soft, fair intercrystalline porosity, questionable permeability; occasional very tight vertical hairline fracture filled with calcite, very fossiliferous; fair oil odor on fresh break, fair even dull-yellow fluorescence; good brown oil stain throughout unit.

DRILL STEM TESTS

DST #1 5464-5504 Johnston tool, straddle packers, 1/2"bottom choke, no water cushion; tool open 2 hours, closed none; opened with weak blow for 2 hours; top packer gave way after 2 hours.

Recovered: 120' free oil

30' mud, heavily cut with oil and gas 30' mud, lightly cut with oil and gas 90' salt water, chl, 62,000 ppm 150' clean mud.

IEHFP: 0 FBHFP: 50# Hydro: 3050#. No shutin pressure.

DST #2 5632-56LL (B-2 Zone) Johnston tool, 1/2"bottom choke, no water cushion, tool open L hours, closed 20 minutes; weak blow throughout.

Recovered: 195' clean oil

90' mud, heavily cut with oil and gas

150' mud cut with gas

30' mud cut with water.

270' salt water (chl. 82,000 ppm)

IBHIP: 0 FBHFP: 300# EHSIP: 2650# Hydro: 3250#

DST #3 5615-5625 Johnston tool, 1/2" bottom choke, no water cushion.

Tool open 4 hours, closed 20 minutes; opened with weak blow throughout.

Recovered: 50' free clean oil

65' mud, heavily cut with oil and gas

270' mud, cut with oil and water

90' fluffy mud heavily cut with gas, oil and water.

180° salt water

IBHFP: 0 FBHFP: 75# BHSIP: 2500# Hydro: 3225#

DST #1, 5630-5638 Johnston tool, straddle packers, 1/2" bottom choke, no water cushion; tool open h hours, closed 20 minutes; open with weak blow, decreasing to a very weak blow at end of test.

Recovered: Trace of free oil

900' mud, slightly cut with oil & gas

210' mud, heavily cut with gas and slightly

cut with oil

150' salt water (chl. 52,000 ppm)

JEHFP: 0 FEHFP: 450# EHSIP 2800# Hydro: 3250#

DST #5 5788-5800

(mis-run), 1/2" bottom choke, no water cushion; tool open 4:55. Lost mud before tool was open. Tool open 4 hours, closed 20 minutes. Recovered: 1350' clean mud.

190' slightly oil and gas cut mud.

No pressures.

Found leak in drill pipe after pulling tool out of hole.

DST #6, 5790-5800

Reran test with Johnston tester; packer set at 5770.

Tool open 6 hours, closed 20 minutes, 1/2" bottom choke. No water cushion. Strong blow throughout test. Cas to surface in 14 minutes. Main valve washed out after pulling 3 strands.

Recovered: 637. oil and gas cut mud.

1952. clean mud.

TBHFP: O FEHFP: O No shutin. Hydro: 3125#

DST #6 5790-5800

Retest with Johnston tester, 1/2" bottom choke, no water cushion. Packer set 5771. Open tool at 9:45 p.m. for 9 hours, closed 20 minutes. Good blow throughout test. Gas to surface 16 minutes. Recovered: 218' oil & gas cut mud, highly oil cut. 212' muddy salt water. Chl. 18,000 ppm. IBHFP: O FEHFP: 75# BHSIP: None Hydro: 3175#

DST #7 5800

(Attempted test, misrum, retest); tool open 5 hours with good blow; no fluid to surface; swabbed with Johnston test tool in hole. Found fluid at 3300'. Swabbed oil down to 5200' on first trip. Recovered oil and rat hole mud on second trip. Swabbed tubing dry with Johnston test tool in hole. Fill-up in 1½ hours was 400' (1½ to 2 barrels) 5% water.

DST #8 5614-5622

Johnston tool; straddle packers set at 5605 and 5627. Tool open with weak blow for 30 minutes, increased to strong blow for 2 hours. Died in 4 hours. (Bottom packer failed).

Revun: 5605-5627. Tool open with strong blow. Gas to surface in 129 minutes. Oil cut mud to surface in 279 minutes. Very slow, but continuous flow of heavy oil-cut mud and oil for 3 hours. Swabbed to pits. 50% water.

COMPLETION SUMMARY

Week Ending 11-21-52:

Perforated open hole from 5793 to 5799 with 2 shots per foot. Tested "C" Zore from 5790-5800. Tool open for 9 hours, closed 20 minutes; good blow throughout; gas to surface in 16 minutes. Recovered 218' mud, heavily cut with oil and gas; 212' muddy salt water (chl. 18,000 ppm) IBHFP 0 FBHFP: 75# BHSIP: None Hydro: 3175#. Acidized "C" Zona with 1000 gellons; cleaned well into pits. Well flowed 24 barrels of 42.2 gravity oik (corr.) and 9 barrels salt water (chl. 75,000 ppm) in 9 hours on 10/64" choke. Cas from same zone estimated at 750,000 cu. feet per day, open flow. Killed flow from "C" zone. Set a Mcdal "D" Baker production packer at 5770. Set a blind Baker seal nipple in packer. Perforated "B-2" zone from 5632 to 5640 with 4 shots per foot. Tested perforations for 5 hours with Johnston tool. No fluid to surface, so swabbed with tool in hole. Found fluid in hole at 3300'. Swabbed tubing dry in 4 trips. Recovered oil with 5% water. Attempted to acidize through test tool with 500 gallons; established communication between tubing. $5\frac{1}{2}$ " casing and 9-5/8" casing. Tested casing for leak with Baker pressure tool. No leak could be found in either the $5\frac{1}{2}$ " or 9-5/8" casing. Tested perforations with pressure tool. Found no evidence of channeling in cement. [Oil and mud flowing from annulus between 52" casing and 9-5/8" casing. Gravity of oil is 39.40 (corr.) A rerun on samples found shows of oil in both the Heath sand at 4850 to 4890 and the Kibbey sand at 5130. Top of cement is estimated to be at approximately 4400. Acidized "B-2" Zone with 1000 gallons. Displaced acid at rate of 1 barrel per minute at 3200#. Formation did not break down. Flowed displacement of oil out in 16 minutes. Made I head of acid and died. Made preparations to swab, and started flowing before swabbing started. Flowed back acid water and oil. Cleaned into pits and turned into test tank. Flowed 2 barrels per hour, 30% water, on 1/8" choke. Flowed 55 barrals oil and 3 barrels water. in 13 hours, open flow. Now flowing into test tank.

Week Ending 11-28-52:

Acidized "B-2" zone with 1000 gallons. Flowed 55 barrels oil and 3 barrels water in 13 hours, open flow. Swabbed 33 barrels oil and 10 barrels water in 6 hours. Fluid level lowered to 2000'. Flowed 14 barrels oil and 2 barrels water in 6 hours, open flow. Swabbed 48 barrels oil and 12 barrels water in 6 hours; fluid level lowered to 4000'. Flowed 29 barrels oil and 2 barrels water in 13 hours, open flow. Reacidized "B-2" zone with 2500 gallons. Flowed and swabbed oil and water into pits. Turned into test tank. Flowed 2.5 barrels 13.2 of oil per_hour with 10% water.

72mg 11

Week Ending 12-5-52:

Perforated "B-1" zone from 5614-5622 with 4 shots per foot. Tested perforations with packers set at 5605 and 5627. Tool open with strong blow. Cas to surface in 129 minutes; oil cut mud to surface in 279 minutes. Very slow but continuous flow of heavy oil cut mud and oil for 3 hours. Swabbed into pits, 50% water. Pulled tool out of hole, and went in hole with fishing tool to fish packer rubbers out of hole. Also fished blind seal nipple out of Baker Model "D" packer. Went in hole with tubing. Tubing perforated both above and below the production packer in order to flow all zones through the tubing. Displaced mud with oil and turned into tanks at 3:15 a.m., 12-3-52. Flowed 27 barrels oil in 5 hours. Pumped 10.8% mud in annulus between 9-5/8" and $5\frac{1}{2}$ " casing in order to kill flow of oil from some upper zones. Rig released at 11:00 p.m., 12-3-52.

202225522	
1,520-1550	Shale, medium gray and brownish-gray, calcareous, glauconitic; siltstone, some light gray, medium grain, very calcareous, glauconitic sandstone. Tr. limestone
1550-1570	No sample.
1570-1770	Same as 1520-50.
1770,-1920	Shale, medium gray and light gray, medium grained, cal- careous, glauconitic sandstone; trace siltstone; trace pyrite.
1920-1990	Siltatone, dark brownish-gray, calcareous, glauconitic; some brownish-gray, fire-grained, calcareous, glauconitic sandstone; slight trace pyrite and bentonite.
1990-2050	Same as above, with trace of dark gray shale.
2050-2070	Shale, greenish-gray, micaceous; some fire grained, glauconitic sandstone.
2070-2100	Shale, and sandstone as above; brownish-gray, calcareous glauconitic siltstone.
2100-2180	Shale, as above; sandstone, as above; brownish gray silty shale.
2180 - 2300	Shale, greenish-gray, micaceous; brownish-gray, silty shale; some light gray, medium grained, calcareous, glauconitic sandstone.
2300	Sample top: Greenhorn
2300-2360	Shale, dark gray, calcareous; some dark gray limestone with white specks.
2360-2600	Shale, dark gray, calcareous, micacecus and brownish-gray calcareous, silty, glauconitic shale; trace white bentonite.
2600~2680	Shale, dark gray, slightly calcareous; some light gray, slightly calcareous shale; trace light brownish gray silty, shale.
2660~2720	Shale, as above; trace gray, glauconitic sandstone
2720-2770	Shale, dark gray; some light brownish-gray, glaucomitic, calcareous, silty shale.
2770-2790	Shale, as above; trace light gray, medium grained, glauconitic sandstone.

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2790–2990	Shale, dark gray and light gray, slightly micaceous; some light brownish-gray, glauconitic, calcareous, silty shale; trace of white bentonite and pyrite.	
2990-3040	Shale, as above; trace very light gray, medium grained, glauconitic, peppery sandstone.	
3040-3080	45' correction in drillers depth.	
3080-3130	Shale, dark gray, slightly micaceous, and light gray, slightly calcareous shale; some light brownish-gray glaucomitic silty shale; trace bentonite.	
3130-3240	Shale, as above; trace light yellow, fine-grained, calcareous, glauconitic, peppery sandstone; slight trace bentonite	
3240-3330	Shale, as above.	
3330-3850	No sample	
3350-3370	Shale, as above.	
3370-3430	Shale, as above; trace light gray; fine grained speckled sandstone.	
3430-3450	Shale, light gray, slightly calcareous; some dark gray, fissile shale; trace brownish-gray silty shale.	
31:5031:50	Shale, as above; trace very light brown, fine grained siliceous sandstone.	
3490-3590	Shale, as above; trace white, medium grained, alightly peppery sandstone.	
3590~3610	Shale, as above.	
361893680	Shale, as above; trace sandstone and bentonite.	
3680-3730	Shale, as above; trace light gray, fine grained, calcareous, glauconitic sandstone.	
3730-3800	Shale, light steel gray and dark brownish-gray shale; trace brown silty shale; trace light gray, fine grained calcareous sandstone.	
3800-3860	No samples	
3880-3920	Shale, medium to dark steel gray; some light greenish-gray, calcareous, pyritic shale; trace dark brownish-gray shale; trace light brownish-gray, silty shale.	
3920-3980	Shale, as above; trace light gray, very fine grained, glauco-nitic sandstone.	

3980-4070	Shale, as above; trace brownish-gray, fine grained, speckled sandstone.
4070-4100	Shale, as above; trace light green, very fine grained, glauco-nitic sandstone.
20 <u>- ابا</u> 200.	Shale, medium to dark steel gray; some light greenish-gray calcarecus, pyritic shale; some light brown, very fire grained, calcareous sandstone.
1120-1160	Same as above, trace gray, fine grained glauconitic sandstone.
4160-4200	Shale, and sandstone as above; trace to some medium brown, shaley limestone.
f ²⁰⁰⁻ f ³ f ⁰	Shale, gray and dark brownish-gray; some light greenish-gray, calcareous, pyritic shale; light brownish-gray, very calcareous, siltstone, with brown specks; trace greenish-gray and brownish-gray, fine grained, calcareous, glauconitic sandstone; trace brown shaly limestone.
115110-115112	Shale and siltstone, as above.
4245	Sample tcp: Piper Shale
4245-4310	Shale and siltstone, as above; trace calcareous brick-red shale; trace calcareous green shale.
4310-4318	Shale, dark gray and light gray.
4318	Sample top: Fiper Limestone
f318-fif00	Shale, dark gray and light gray; some light, greenish-gray, calcareous, pyritic shale; trace dark brownish-gray siltstone; trace red and green shale; some brown, hard, dense, amorphous limestone, with numerous calcive veinlets (small).
14.00~14.120	Shale, light greenish-gray, calcereous, waxy, splintery; some brownish-gray fissile shale; dark steel gray shale; trace brick red shale with gray streaks; trace black fissile shale.
1450-4590	Shale, as above; trace anhydrite, gray, fine grained; glauco- nitic, pyritic, calcareous sandstone; trace to some white- brown, hard, dense, amorphous limestone, with small inclusions and veinlets of calcite.
1,590-1;690	Sardstone, red, fine grained, oclitic; some dark brownish-gray and light greenish gray shale; trace light green, blocky shale; trace white anhydrite.

	6 14 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
4690-4800	Shale, grahish-brown and light grayish-green, waxy, splintery; trace bright blue-green shale; trace red shale; some light brown amorphous, fossiliferous limestone.
<u> </u>	Sample top: Amsden
1800 - 1850	Shale, dark brownish-gray, calcareous, splintery shale; some red and green variegated shale; trace purple, argillaceous dolomite.
1,850-1,900	Shale, light greenish-gray and brownish-gray, calcareous, splintery; some very hard reddish-brown, medium grained, angular grains, sandstone; trace red and green shale.
4900-4970	Limestone, dark brown, argillaceous, dense, some pink, medium to fine grained calcareous sandstone; trace red, sandy shale; trace ankerites; some greenish-gray shale.
4970-5000	Shale, grayish-green, waxy, splintery, calcareous shale, with some red, green, gray and purple calcareous shale.
5000	Sample top: Otter
5000-5060	Limestone, light gray, argillaceous; dense; varicolored, calcareous shale; bright blue-green shale with red dots.
5060-5120	Shale, greenish-gray, calcareous; trace limestone; trace light grayish-green calcareous, glauconitic, siltstone; trace red and green shale.
5120-5280	Sandstone, red, very fine grained, grains well rounded to subrounded; trace reddish-brown, slightly calcareous claystone; trace brick-red, slightly calcareous sandy shale.
5280-5310	Limestone, light to medium brown, hard, dense, amorphous, with numerous small calcite inclusions, with some red sandstone and shale.
5310-5360	Sandstone, red, very fine grained, slightly calcareous; some pink argillaceous limestone; some light greenish-gray, slightly calcareous shale; trace black fissile shale.
5360-5370	No sample.
5370-5378	Shale, light gray, calcareous.
5378	Sample top: Charles
5378-5400	Shale, light gray, calcareous; trace white crystalline lime- store; trace white anhydrite; trace red and green shale.

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5400-5460	Shale, varicolored; some light gray, argillaceous, fossiliferous, amorphous limestone; trace to some white anhydrite.
5460-5474	No samples
5474-5512	Core #1
5512-5530	Limestone, light gray, medium crystelline, delemitic; some light pink-brown, fine crystalline limestone, with streaks crystalline ls; trace white granular anhydrite.
5530-5540	Anhydrite, white, granular; some light to medium brown, dense, fine crystalline limestone, with occasional calcute crystals.
· 5540 <b>-</b> 5570	Anhydrite, white, granular; and dark brown, fine crystal- line, anhydritic limestone; trace light gray, argillaceous, lithographic limestone; light gray, fine crystalline, porcus dolomitic limestone with scattered calcite crystals.
5570-5601	Limestone, medium brown, fine crystalline, anhydrite and light brown, fine to medium crystalline limestone, with occasional calcite veinlets and clusters of calcite crystals; trace clear salt; trace white anhydrite.
5601-5641;	Core #2
56LU; <del>-</del> 5700	Limestone, dark grayish-brown, fine crystalline, dense, with numerous calcite crystals and veinlets; some light brown, porous, pseudo-colitic limestome; some light gray, fine crystalline, porous delemitic limestome.
5700-5710	Dolomite, light gray, very fine crystalline, with numerous calcite veinlets; pink limestone, with numerous calcite crystals and veinlets; trace white anhydrite.
5710-5730	Limestone, medium brownish-gray, very fire crystalline; light gray, very fire crystalline dolomite; trace white anhydrite.
5730-5740	No sample
5740-5775	Core #3
5775=5 <b>7</b> 82	S. L. M.
5782-5792	Core #4
5792-5800	Core #5
	Total Depth 5800 Drillers .

Total Depth 5802 Schlumberger

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### HORKOVER

CH APD CAS CO. SULLAND DESCRIBE OF THE COURT OF FIGURES.

Production for May, 1955 averaged 168 BOPD plus 33% water cut. Tubing was pulled to check seal ring in Baker Model "D" packer and determine if water was coming from the "C" Zone.

6-1-55: Pulled 2-1/2" tubing and dressed Baker seal nipples for Model "D" production packer. Ran tubing with Baker No-Left Latch on sub. Latch on would not catch, tubing was landed with 7000# weight on Model "D" production packer. D and B₁ 2-1/2" x 1-1/2" x 16' insert pump was run and seated in top of 2-1/4" liner barrel at 4928'. The following test was run:

6-10 through 6-18, 1955, averaged 130 BOPD, plus 67% water cut.

6-18-55: Pulled tubing and rods, ran Baker junk basket and gauge ring on wire line, found top of Baker Model "D" production packer at 5772.5'. Ran Baker Model "K" cast iron bridge plug on wire line set at 5754', Lane Wells measurement. One sack of cement on top of bridge plug. "C" Zone blanked off with bridge plug.

6-19-55: Dry tested bridge plug set at 5754' with Halliburton test tool packer set at 5739'. Tool open 30 minutes. Tool opened with weak bubble for 30 seconds, dead rest of the test. Picked up tubing and set packer at 5559'. Tested "B" Zone perforations at "B-1" Zone 5614'-5622', "B-2" Zone 5632'-5640'. Tool open 75 minutes, weak blow throughout test. Well flowed through casing while test tool was set, indicating leak in 5-1/2" production casing. Pressured casing while test tool was set. Pumped into leak 1 barrel in 8 minutes at 800%. Pulled test tool. Pressures on "C" Zone dry test, IBHFP-15%, FBHFP-15%, "B-1" and "B-2" test, IBHFP-458%, FBHFP-1900%, 30 minute BHSIP-2696% Hydro-2545%. Recovered 2500' of muddy salt water.

6-20-55: Ran Baker full bore retrievable packer, found leak at 3822' RXB. Pulled tubing.

6-21-55: Ran full bore packer and retrievable bridge plug, set bridge plug at 5408', set packer at 5378'. Would not hold. Found leak in pin cellar. Reran bridge plug and RT8 Baker retrievable cementer. Set bridge plug at 5524'. Packer at 5463'. Pressured to 4000#. Held 1 minute, then gave way, changed packer setting, still would not hold. Tested tubing by pumping test ball down tubing. Held 4000#. Tubing ok. Made trip and repaired bridge plug. Pack off rubber cut. Reran packer and bridge plug. Set Bridge plug at 5348', picked up one single, tested bridge plug and packer with 4000#, held 30 minutes. Spotted 5 sacks of jel, 9 barrels of slurry on top of bridge plug. Checked location of leak at 3822'.

6-22-55: Set packer below leak at 3840'. Tested 5-1/2" casing and bridge plug with 2000#, held ok. Set packer at 3810'. Broke formation with 15 barrels of salt water at 1400#, no returns through 9-5/8" casing. Squeeze #1 with 100 sacks of Slo-set cement at 1500# maximum pressure, waited 6 hours.

Squeeze #2 with 75 sacks of Slo-set cement. Maximum pressure 1800#, would not hold, waited 6 hours. Squeeze #3 with E3 sacks of Slo-set cement, maximum pressure 2200#, would not hold, waited 2 hours. Squeeze #4 with 50 sacks of Slo-set cement, maximum pressure 3000#, held, washed down to 3840° to clear cement out of pipe. Pulled up 5 std. Let set overnight.

6-23 & 6-24-55: Started in hole to wash out jel and recover bridge plug. Packer hung at 3839. Lost lower part of RT8 Baker packer in hole. Made 2 trips with Bowen releasing spear and jars, found fish at 5408, failed to catch fish.

6-25-55: Ran bulldog spear, found fish at 5740°. Caught fish, came out with same. Made trip with retrieving head. Recovered bridge plug at 5745° PBTD.

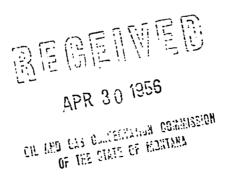
6-26-55:	Pan tubing and rods as follows:	
•	Landed below RKB	9,80
	158 jts. of 2-7/8" tubing	4928,00
	$2-1/2^n \times 2-1/4^n \times 6^n$ stroke through barrel	6,001
	25 jts, of 2-7/8" tubing	862,201
	2-7/8" x 3' perf. nipple bull plug	3,000
	Bottom of tubing	5709,001

#### Rod See

113	3/4" x 25° Plane rods	2825,00
40	7/8" x 25' Plane rods	1000,001
	7/8" x 25' with scrapers	1075.00
	7/8" x 10' suh with scraper	10,001
	in on polish red	18.00*
2-1/	2" x 1-1/2" x 16' D&B brl. spaced at	4928,00°

## Morkover Results

Production average for July, 1955 was 119 barrels of oil per day plus 2% water cut.



# WORKOVER HISTORY NO. 2

				Date_Nove	mber 2, 1964	-
Lease and Wel	l No. <u>Eas</u>	t Poplar I	Jnit Well No. 1	2	ويادون بي نورد موجود ويود المساور ويود المساور ويود المساور ويود المساور ويود المساور ويود المساور ويود المساور	-
Field East	Poplar	_County	Roosevelt	State_	Montana	i pomo
tested to 2000# PSI, held OK. Came out of hole. Picked up retrievable head and retrieved B.P Came out of hole laying down workover string. S.I. overnight.  10-11-64  Finished laying down W.O. tbg. Ran prod. string. Started pumping at 2:30 PM. Will test when levels on fluid.  10-14-64  Pumping at the rate of 135 BFPD, 75% water, 34 BOPD, 101 BWPD						
Status Prior	to Present Jo	<u>b</u> :				
Date Complete	ed <u>Decembe</u>	r 3, 1952	Date La	st Workover_	June 26, 1955	وخيدوع
TD 58021	PBTD_	57541	Producing Z			
Perforations_	5614-5622	(B-1) 50	532-5640' (B-2)			
Cumulative Pr	oduction	490,4	12 BO 239,	643 BW		Taragetta de
Latest Test b	efore Csg. Le	ak 190	BF, 69% water,	59 BO, 131 BI		· · ·
Justification	for Workover	To locat	te and repair i	ndicated cast	lng leak @ 3855.40	l Tomas
Summary of Wo	orkover:		•			
10-8-84					ls and thg.	
10-9-64	OK. Pin poi below leak. reg. cmt. w/ Csg. leak so bled to 0 PS	Inted leak Broke for .67 Halid Tueezed @ : I (\f bbl.	at 3855.40°.  rmation down w/ a 9 added. Sta 3500# and held.  return) back t	Spotted 3 bb 3500# @ 3.5 l ged cmt. for Released to to pump truck	is. of gel on B.P. BPM. Mixed 75 sks. 3 hrs. and 5 min. pump truck. Prese and repressured to	sure
10-10-64	tested to 20 head and ret	000# PSI, I	held OK. Came	out of hole,	Picked up retriev	able
10-11-64					. Started pumping	
10-14-54	Pumping at t	he rate o	f 135 BFPD, 757	water, 34 B	OPD, 101 BWPD	
10-15-64	Promine at t	he rate o	F 130 RFPB. 757	. water. 32 Bi	OPD. 98 EWPD	

10-19-54 Pumping at the rate of 130 BFPD, 75% water, 32 BOPD, 97 EWPD

Comparison:

9-10-64

190 BF

69% water 59 BO

131 EW

10-19-64

130 BF

75% water 32 BO

97 EW

-60

+6% -27

-34

10-31-64 Pumping at the rate of 130 BFPD, 73% water, 35 BOPD, 95 BWPD Workover Potential after Workover.

#### Recap of Horkover:

- 1. Final Perforations: 5614-5622' (Ed) 5632-5640' (B-2). Unchanged
- 2. Final PBTD 5754'. Final TD 5802'. Unchanged
- 3. Workover Potential after Workover: 130 MFPD, 73% water, (35 BOPD, 95 BWPD)
- 4. Producing Zone: B-1 and B-2 Zone of Madison Formations, Unchanged

Tested flow from Csg. leak at the rate of 47 BFPD, 81% water, (9 BOPD, 38 BWPD) Flowing on a 12/64" choke.

## EASK POPLAR THIS NO. 13

#### HOUROVER HESMORY NO. 3

THE COURT AND A PART AND A LOCAL REPORT OF THE SECTION OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PARTY OF THE
Minid: Rest Replay Bait County: Rossavelt State: Mailton
Wali Locations SW SE Section 3, 7289, R51E
SMANUA PRIMU NO RÉFISTAN LIQUE
Dato Complehed: <u>Recember 3, 1952</u> Pate Of Last Worksver: June 26, 1955
T.D.: 5862' PEFC: 5754' Producing Zone: Bol & 2 Zones of Madison Townshion
Perforablecs: 5614-5622 (E-1) 5632-5640' (E-2) Cumulariya Panduculon: E-1 6
E-W 585.309 BC .556.254 BW
Larest 7.st; 11/13/74 132 NFFO 28 BOPD 104 BWFD 75% W.S.

#### JUSTIN HUARWON FOR WORKOVER!

A casing heak developed in this wall in 1964. After the leak was repaired production dropped from 198 BFFD to 130 BFFW. By suidizing this well the fibid production should be intressed to 198 BFFD. If the water out does not increase a 12 BOFD incomes should be noted.

#### SIMPLY OF HOUSENESS

- B-S-74 5754 PBSC Prepairing to M.T.R.V.P.U.
- 3-6-74 5934 FDTA Propering to edidize well.

  Noved in and rigged up pulling unit. Fulled rods and toking. Fiched up I joint tell pipe, Model "R" packer and 3 joints of tubing. S.I. "" might.
- 5.7.76 5754 PARK Propairing to put well to pusping
  Eydectested tobing in hole and sat packer at 5681 . This services and basked
  to 500 FST, hald OR. Est, injection rate of 1 1/4 BFM at 1670 FST. Addition
  parforations with 750 gallons of 15% NGL, 16% W-66, corresion inhibition and
  iron sequestiving agent. Injection pressure increased from 500 FST to 2860 FGT
  while additing at the rate of 1/2 BFM down to 1/4 BFM at the ext. AST = 2/00 FS
  15 Mill 8.1. = 2000 FST, 16 Mc. S.E. = 250 FSE. S.E. eventight order programs

- 3-3-74 5784 2879 Prepairing to put well to pumping.

  Blad off pressure and precived to pull tubing. Floor hand achlopsed that to S.L. oversight. Unable to get exciber man.
- 3-9-74 5754 Fecto Prepairing to put well to pumping.

  Police tubing and packer. Row production string. Usable to not the delived to cauter. Come out of hole. Laft aschor on bacton. Row www Culbratt cauter and 5.1. Observing ...
- 2-10-74 5734' PDTD Pump Westing Row mode and put wall to pumping -
- 3-11-74 5754 FROD Pump Testing No test - Pumping 196% Wester
- 3-12-74 5754' PETA Pump Testing No. Mestin Dumping 100% Water
- 3-13-74 5756' PATO Pump Testing 20 EM. Test Pumped 111 BF = 133 BIFD 11 BOFD 122 DWFD 97% BS&W.
- 3-14-74 5758 Paro Pump Testing We thank
- 3-15-74 5754 Part Pumping 18 Ft. Tast Pumped 95 BY - 176 EFTS 18-ROPD 113 NAPO 904 MEMBER
- 0-10-74 5758 PRID Pump Westing 10 He, 1981 Pumped 98 NS = 100 MSTO 19 NOTE THE NSTE SST DECK
- 2-17-74 5751 PETD Pump Yeshiwg The set Year Compad 127 BFPD 19 DOFT 108 FVP1 857 ESSM
- 0-18 TV 5758 PAGE Fump Mesting ...
- 5-19-74 5/54 Puno Puno Mesting 6 No. Test Punoed 36,59 No. 146 EFFC 23 NOFE 123 EMPTO 840 DEEM
- U-MI-JA 5754 BOTO People Messing Sign Tash People IND DIFF IN BOFF THY PAIR GAY BOAR
- 3-31-74 5754 PIND Pump Wasking 24 Mr. Mast. Pumped 134 EFFD 21 EOFS 113 NWPP 84% BSSM
- N-10-74 5754 FETT Fump Testing Sign, test Pumped 35.81 BT = 135 ENFO 23 BOFF Will PMPO 807 DSWI Merkove: Potential - To Drop Twom Report

# HERLY OF HORROWPY:

dust De-Socationes

5614 - 5622° N-1 Zon.

5840 - 5640° 877 2777 1000 1000 900

A Frank Minds

5754 Muchaegad

Producing Zone:

B-L sed B-2 Washinged

Worksums Petrophial:

135 Byph 23 Boph

112 MARD STA PSEE

Workever Unsuccessful - Oil production doorsesed by 5 hord and the woker eve inducesed by 4%.

# east poplar unit no. 12 workover history no. 4

Lease and Hell No.: East Poplar Weit No. 12
Field: East Poplar County: Roosevelt State: Montana
Wall Longition: SH SE Section 3, 1728N, R51E
STATUS PRICE TO PRESENT JOB:
Date Completed: <u>Necember 3, 1952</u> Date Of Last Workover: <u>March, 1974</u>
1.D.: 5802' PBrD: 5754' Producing Zone: B-1 and B-2 Of Madison
Perforations: 5614-56221; and 5632-5640!
Communicative Production: 605,145 BO 660,345 BW
Latest Dest: April 11, 1976 184 BFF0 24 BOPD 160 BWPD 87% W.C.

#### JUSTIFICATION FOR WORKOVER:

It is proposed to set a packer below the B-2 Zone, parforate the B-4 Zone (5693-5693') together with the B-3 Zone (5655-5660') and test. Then, isolate all "B" Zone, parforate and test the A-4 Zone (5501-5503').

These womes, commingled with the presently open B-1 and 2 are expected to yield total fluid production volumes which will be excessive for the beam pumping unit now on the well. It is proposed to run a low volume test Reda (Type D20E, 96 stage powered with a 70 H.P. motor) in this well.

Expected daily production is 650 BFPD, 590 BWPD and 60 BOPD. This would give us a increase of 38 BOPD. An increase in production of 38 BOPD would pay out in approximately 3-1/2 months and yield an increased rate of return in excess of 50%.

#### SUMMARY OF HORKOVER:

6-29-76 Move in rig - Rig up and pull rods and tubing. (Prepare well for No. 58 Reda). Trip in hole with Johnston packer and ret. bridge plug. Tagged old tubing anchor at 5554" - pulled out of hole. Laid down packer's. Preparing to go in hole to fish anchor or work down hole.

- 6-30-76 Wrip in hole with tubing opened ended "tried to screw cato tubing achor. Unable to do so because of slip lost in hole in 1974 and fouling unapple top (2" x 2-3/8" sub looking up from anchor). Palled out of hole "calling for mill and drill out equipment.
- 7-1-76 Wrip in hole with 1 joint wash pipe, jars and milling shoe to mill out tubing anchor slips at 5554° while milling, anchor slipped to 5700°. Tried to swallow anchor in wash pipe pulled out of hole did not have fish. Laid down wash pipe and shoe picked up spear and started in hole, 1/3 way in, shut in for right.
- 7-2-75 Trip in hole with spear could not spear into fish pulled out hole. Trip in hole with grapple tagged at 5650' pulled out hole grapple had 2-1/2" bull plug. This had prevented spear from going in anchor. Hade another trip with grapple pulled out hole with anchor Shut in for tight.
- 7-3-76 Trip in hole with Go Intermational wireline with gauge ring to 5654' could not go deeper ran sinker bar to 5654'. Well records do not show restriction at this depth. Rigged down wireline shut in for night.
- 7-4-76 Sunday Shut Bown
- 7-5-76 Holiday Shut Down
- 7-6-76 Trip in hole with bit and scrapper. Rigged up drilling head and power swivel drilled and pushed cement plug to 5681°. Shut in for night.
- 7-7-76 Drilled and pushed cement plug to 5735'. Bit plugged. (22' of rat hole from B-4 perforations 5693-98'). Pulled out of hole started in hole with Johnston packer and ret. bridge plug. "Fools set at 1600' shut in for night.
- 7-8-76 Released packer and pulled out hole. Run new Johnston packer and bridge plug set at 5667°. Bry Swabbed tested bridge plug at 5754° and coment plug pushed to 5735°. Swabbed fluid to 5400° no entry. Went in with rubing to 5725° and set ret. bridge plug. Pulled to 5600° with packer. Rigged up Go International and perforated B-3 at 5655-5660° and B-4 at 5693-5698°. Set packer at 5673°, isolating B-4 swabbed B-4, 5 runs to 5600°. Recovered 33 barrels, 100 % water. Approximate capacity of tubing. Made two more was no fluid entry. Shut in for night.
- 7-9-76 Moved ret. bridge plug to 5673'. Set packer at 5643' isolating B-3 (5655-60') Zome. Fluid level 1100'. Swabbed 45 barrels fluid at 100% water cut (tubing capacity). Decreased to 97% with fluid level at 3500'. Lost swab tools in hole. Went in hole with overshot and lost second set of tools. Publica out of hole with tubing recovered all tools. Shut in for night.

- 7-10-76 Trip in hole with tubing set packer at 5643'. Fluid level at 1100'. Swabbed well down to 5400'. Recovered 35 barrels fluid 93% water cut. Making 2 runs per hour hitting fluid at 5400'. No entry. Released crew.
- 7-11-76 Tagged fluid at 1500'. Swabbed down to 4500'. Waited 1/2 hour fluid still at 4500'. Rigged up Bowell Acidized with 250 gallons of RA-8 with 2 gallons A-170 inhibitor and 1 gallon W-27 demulsifier added. Pumped in formation at 3/4 BPM with 1400 PSI ISIP 1400 PSI 15 min. SIP 600 PSI. Overflushed with 10 barrels formation fluid. Left shut in 1 hour. Started swabbing back with fluid level at surface. Swabbed down to 5400' 4 runs per hour. Recovered tubing capacity and acid plus flush 49 barrels and 38 barrels formation fluid 93% water cut. Making 2 runs per hour with fluid level staying at 5400'. (Recovering approximately 2 barrels per hour.)
- 7-12-76 Sunday Shut Down
- 7-13-76 Swabbed fluid level from 1500' to 5000', 6 swab ruzs, recovered 29 barrels fluid. Initial water cut 88%. Final water cut 96%. Rigged up Bowell to acidize. Acidized B-3 perforations (5655-60') with 500 gallons 15% BDA acid with 5 gallons A-170 inhibitor and 15% L-41 iron sequestering agent added. Pumped 12 barrels acid plus 20 barrels formation water at 2-1/2 BPM and 0 PSY until caught pressure. Pumped remaining 28 barrels flush at 3/4 BPM, pressure increased from 400 PSY to 1400 PSY. ISYP 1200%, 15 minute SYP 400%. Swabbed back 125 barrels fluid, 4 runs per hour, fluid level pulled down to 5400'. Swabbed 6-1/6 hour. Initial water cut 100% Fixal water cut 96%. Shut down.
- 7-14-76 Fluid level found at 1800', swabbed fluid level to 5100' in 6 rues, 4 rues per hour. Initial water cut 92%. Stopped to repair rope socket on sand line, repaired same. Started swabbing again, fluid level still at 5100', 4 runs per hour, water cut 94%. Made 6 more runs, switched to 2 rues per hour for last 7 runs. Recovered 80 barrels fluid final water cut 94%. 24 Hour rate based on last swab runs = 140 EFPD 132 EMPD 8 BOPD.
- 7.15-76 Rigged up HOWCO to treat B-1, B-2, B-3, and B-4 with EOWCO Mod 202 as follows: (isolating each). B-1 Zone 5614-22' with 2000 gallons B-2 Zone 5632-40' with 3000 gallons B-3 5655-60' with 2000 gallons B-4 5693-98' with 3000 gallons. Isolated B-3 with ret. bridge plug set at 5673' and packer at 5643'. Spotted 2000 gallons acid and pumped in formation at 3/4 BPM at 1250% with 1000 gallons, packer gave way. Released and re-set packer would not hold made trip for new packer. Set new packer above B-1 at 5570' and pressured casing with 860%, OK. Run packer to 5645' and spotted remaining 1000 gallons acid. Set packer Pumped 500 gallons acid at 1 BPM at 1500%. Cct communication to B-2 Zone.

Pulled packer above B-1 and set 5570' - pressured casing with 800%, Okana packer to 5628' and spotted 3500 gallous acid to treat B-3 and B-2 together. Pumped 500 gallous acid at 3/4 BPM at 1600%. Cot communication to E-1 Zone. Released and reset packer above B-1 Zone at 5575' and pressured casing with 800%, OK. Spotted remaining acid for B-1, B-2, and B-3 (5000 gallous) and pumped in formation as follows:

ВРИ	T.P.	Time	Csg.	Ebls.
1.3	700	5:15	800	Start
3.4	1000	6:30	800	15
	1000	6:35	800	24.5 in
1.8 1.25	1500	6:45	800	48
0.95	1500	7:15	800	<b>7</b> 5
1	1500	7:25	800	85
1.2	1500	8:00	800	119 in

All acid in formation-starting overflush (20 barrels formation water).

1 1500 8:10 800

ISYP - 1450# 5 Min. SYP 1250# 1 Hour SYP 900 10 Kr. SYP 0#

7-16-76 Released packer at 5575°. West in hole and released rate bridge plug at 5673' - let bridge plug hang free on packer and set packer at 5685' to avidize B-4 Zone 5693-98' with 3000 gallons Mod 102 avid. Spotted acid and started treatment.

_ უ.P.	Gal. In	. Yime	Remarks
5000#	<b>N</b> T	30 Min.	
1000#	None		
£500 <i>∯</i>	Naus	30 Him.	•
2000#	Nose	30 Min.	
2500∌	50 Gal.	1 Eour	No Ereak
2750#	100 Gal.	2 Mours	No Kreak
3000#		10 Min.	
<b>2800</b> #	350 Gal.		
3000#	•	10 Mlr.	
2800 <del>5</del>			•
3000#		10 Min.	
2800₽			

Above for 3 hours - moved 350 gallons acid
No pressure break-developed tubing leak. Reversed out 2500 gallons acid.
Pulled out of hole looking for tubing leak. Did not find leak - shut
in for night.

7-17-76 Rigged up hydro test, tested tubing to 5000%. Found 1 joint leaking at 3000% approximately. Ram HOWCO R-4 packer, set packer at 5585%, started swabbing. Swabbed 8 hours, recovered 256 barrels fluid, 100% water cut, acid water and flush water.

- 7-18-76 Swabbed 10-1/2 hours, 3-1/2 runs per hour, 351 barrels, 94% water-cas." Skazic fluid level 800°. Swabbing fluid level 3500°. Pulling swab from 5000°. Still getting acid water and gas
- 7-19-76 Sunday Shut In
- 7-20-76 Swabbed 11 hours, recovered 349 barrels fluid, fluid level at 3500', water cut ranged between 92% and 95%, last 2 runs water was 75% and 88%. Fluid level was at surface with 500% on casing.
- 7-21-76 Static fluid level at 1500' with 100# tubing pressure. Swabbed 4 hours, Recovered 128 barrels fluid, water cut 96%. Swabbing fluid level 3500', rigged down pulling unit. 24 Hr. basis 768 EFPD 691 EWPD 77 EOPD.
- 7-22-76 Shur Ma Waiting on Reda equipment.
- 7-23-76 Shut Ya Waiting on Reda equipment.
- 7-24-76 Shut Y: Waiting on Reda equipment.
- 7-25-76 Shuz In Waiting on Reda equipment.
- 7-26-76 Shur En Waiting on Reda equipment.
- 7-27-76 Shut I'm Waiting on Reda equipment.
- 7-28-76 Shur Ym Waitiong on Reda equipment.
- 7-29-76 Moving in rig to run Reda pump. Pump zones B-1, 2, 3 and 4 co-mingled. Will set Reda at 5400°.
- 7-30-76 Pulled out of hole with tubing and HOWCO R-4 production packer.
- 7-31-76 Rig up Reda pump, start in hole, made 2 cable repairs, shut down.
- 8-1-76 Minished running in hole, hooked up wellhead, started unit, running OK. 30 Amps Rigged down pulling unit.
- 8-2-76 Pumping Mested at the rate of 682 EFPD 641 ENPD 41 EOPD (flush test)
  - 8-3-76 Pumping at the rate of 675 BFPD 641 BWPD 34 BOPD 95% W.C. 28 Amps.
  - 8-4-76 Pumping at the rate of 672 EFFD 591 EWPD 81 KOPD 88% W.C. 28 Amps. Pump had shut down 8 hours out of 24 hours prior to test. Was down 1 hour shortly before test.
  - 8-5-76 No Yest Working on problem as to why well is shutting down.
  - 8-5-76 No Test Shut down overmight, casing open to atmosphere, to start up this morning.

8-S-87 Well Pumping Off - No Yest

8-9-76 Well Pumping Off - No Tast

8-10-76 Pulled out of hole with Reds equipment, preparing to put well back to red pump.

8-11-76 Laid down Reda equipment - West in hole with tubing to  $5000^{4}$ . Picked up  $2-1/2^{\prime\prime} \times 2^{\prime\prime} \times 16^{4}$  insert pump. Went in hole with reds, rigged down pulling unit, transformers changed out, waiting on electrician.

8-12-76 Pumping - No Test

8-13-76 Pumping - No Nest

8-14-76 Pumping - No Test

8-15-76 Pumping - No Yest

8-16-76 Pumping at the rate of 268 EFFD 241 BWFD 27 BOPD 90% W.C.

8-17-76 Pumping at the rate of 268 KFPD 241 BWPD 27 BOPD 95% W.C.

8-18-76 Pumping at the rate of 268 EFPD 241 EWPD 27 BOPD 90% W.C.

8-19-76 Pumping at the rate of 268 EFPD 241 EWPD 27 EOFD 90% W.C.

8-20-76 Pumping at the rate of 268 EFFD 241 BWPD 27 EOFD 90% W.C.

8-21-76 Pumping at the rate of 268 EFPD 241 BWPD 27 BOPD 95% W.C.

8-22-76 Fumping at the rate of 268 EFPD 241 EWPD 27 BOFD 90% W.C.

8-23-76 Pumping at the rate of 268 EFPD 241 EWPD 27 EOPD 90% W.C.

8-24-76 Pumping at the rate of 268 EFFD 240 EWPD 28 EOFD 90% W.C.

8-25-76 Pumping at the rate of 265 EFFD 238 BWPD 27 BOPD 90% W.C.

8-26-76 Pumping at the rate of 265 EFFD 238 BWPD 27 BOPD 90% W.C.

8-27-65 Pumping at the rate of 260 EFPD 234 BWPD 26 BOPD 90% W.C.

8-28-76 Pumping at the rate of 260 BFPD 234 EMPD 26 BOPD 90% W.C.

8-29-76 Pumping at the rate of 260 BFPB 234 EWPD 26 EOFD 90% W.C.

8-30-76	Pumping at the rate of 260 BFPD .234 BWPD 26 BOPD 90% W.C.	
8-31-76	Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.	
9-1-76	Pumping at the rate of 260 BPPD 234 BWPD 26 ROPD 90% W.C.	
9-2-76	Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.	
9-3-76	Pumping at the rate of 260 BFFD 234 BWPD 26 BOPD 90% W.C. Moved in and Rigged up pulling unit. Changed pump from $2-1/2^{\prime\prime}$ 2 to $2-1/2^{\prime\prime}$ x $2-1/4^{\prime\prime}$ . Pulled up hole from 5554' to 3800'. Purtesting the B-1, 2, 3, and 4 Zones.	c np
9-4-76	Pumping at the rate of 260 BFPD 234 BWPD 26 EOPD 90% W.C.	. •
9-5-76	Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.	
9-6-76	Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.	
9-7-76	Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.	
9-8-76	Pumping at the rate of 314 MVPD 280 BWPD 34 BOPD 89% W.C.	
9-9-76	Pumping at the rate of 315 BFPD 280 BWPD 35 BOPD 89% W.C.	
9-10-76	Pumping at the rate of 315 EFPD 280 EMPD 35 BOPD 89% W.C.	
9-1176	Pumping at the rate of 284 BFPD 250 BWPD 34 BOPD 88% W.C.	
9-12-76	Pumping at the rate of 284 BPPD 250 BWPD 34 BOPD 88% W.G.	
9-13-76	Pumping at the rate of 184 RFPD 250 BWPD 34 BOPD 88% W.C.	
9-14-76	Pumping at the rate of 185 BFPD 250 BWPD 35 BOPD 88% W.C.	
9-15-76	Pumping at the rate of 285 BFPD 250 BWPD 35 BOPD 88% W.C.	
9-16-76	Pumping at the rate of 285 BFPD 250 BWPD 35 BOPD 88% W.C. To Erop From Report - Workover Potential	

#### RECAP OF WORKOVER:

Final Perforations:

B-1 5614-5622 Unchanged B-2 5632-5698 Unchanged

B-3 5655-5660'

в-4 5693**-5**698°

Final PBTO:

5754' Unchanged

Workover Potential:

285 BFPD 250 BWPD 35 EOPD 88% W.C.

Gaologic Name Of Producing Zone:

B-1, 2, 3, and 4 Zomes of Madison

Results Of Markover:

011 production was increased by 10 BOPD and the water cut was increased by 1%.

#### E.P.U. # 12

MIRUPU, couldn't unseat 2" rod pump, tried to back off rods, twisted 3/4" rod off 6 rods above pump.

Tried to release anchor, and couldn't, pulled up to 75,000#, sheared anchor, still wouldn't release, tubing would turn to the right with little torque, jarred up and down on the tubing, but wouldn't come loose.

Picked up National insert pump, anchor and ran on the bottom of the 2" insert pump.

Ran rods and hung on.

# CORE ANALYSIS REPORT FOR MURPHY CORPORATION

BAST POPLAR UNIT NO. DE WIEL.
BAST POPLAR DIBLO
ROOSEWELF COUNTY, MONTANA



# CORE LABORATORIES, INC. Petroleum Reservoir Engineering DALLAS, TEXAS

December 12, 1952

Murphy Corporation 1125 University Building Denver, Colorado

Attention: Mr. Gordon Kirby

Subject: Special Core Analysis

East Poplar Unit No. 12 Well

East Poplar Field

Roosevelt County, Montana

#### Gentlemen:

Diamond conventional cores from the Madison formation in the subject well have been sampled and quick-frozen by a representative of Core Laboratories, Inc. and later analyzed in our Williston, North Dakota laboratory. Results of the analysis are presented in tabular and graphical form on the attached Special Analysis Core Report. Water base mud was used as the drilling fluid.

Madison formation analyzed from 5483 to 5506 feet is interpreted to be essentially low capacity oil productive.

Formation analyzed from 5616 to 5637.6 feet is interpreted to be oil productive. Formation from 5637.6 to 5644 feet is characterized by consistently high water saturations and should give a high degree of water cut.

Formation analyzed from 5792 to 5801 feet is interpreted to be essentially oil productive.

Recovery estimates for the zones, 5617 to 5637.6 and 5792 to 5801 feet, are given on page one.

We hope these data prove beneficial in the evaluation of this well.

Very truly yours,

Core Laboratories, Inc.

J. D. Harris,

District Engineer

JDH: ma

FORM F-11A 2

#### CORE LABORATORIES. INC.

Petroleum Reservoir Engineering
DALLAS

Page_	1		of	_1	
File _	·FL	25-303	S		•
Well:	East	Poplar	Unit	No.	<u>.</u>

#### CORE SUMMARY AND CALCULATED RECOVERABLE OIL

ÇÜRE SUMMARY				
FORMATION NAME	Madison	Madison		
: DEPTH, FEET	5617.0-5637.6	5792.0-5801.0		
% CORE RECOVERY	100	100		•
FEET OF PERMEABLE, PRODUCTIVE FORMATION RECOVERED	12.6	9.0		
AVERAGE PERMEABILITY MILLIDARCYS	Max.: 5.1 90°: 2.9	Max.: 0.3 90°: 0.05		
CAPACITY — AVERAGE PERMEABILITY X FEET PRODUCTIVE FORMATION	Max.: 64 90°: 37	Max.: 2.7 90°: 0.45		•
AVERAGE POROSITY, PERCENT	11.2	9.9		
AVERAGE RESIDUAL OIL SATURA- TION, % PORE SPACE	16.2	13.8		
GRAVITY OF OIL, 'A,P.I.	39	39		
AVERAGE TOTAL WATER SATURA- TION, % PORE SPACE	36.3	41.2		·
AVERAGE CALCULATED CONNATE WATER SATURATION, % PORE SPACE	36.3	41.2		
SOLUTION GAS-OIL RATIO. CUBIC FEET PER BARREL (1)	660	660	•	
FORMATION VOLUME FACTOR—VOL- UME THAT ONE BARREL OF STOCK TANK OIL OCCUPIES IN RESERVOIR (1)	1.38	1.38		
CALCULATED RECOVERABLE DIL		on complete isolation of each of area of well should be con-	division. Structural position of siderod.	well total permeable thic
BY NATURAL OR GAS EXPANSION. BBLS. PER ACRE FOOT (2)	89	71		
INCREASE DUE TO WATER DRIVE. BBLS. PER ACRE FOOT	171	150		
TOTAL AFTER COMPLETE WATER DRIVE, BBLS. PER ACRE FOOT (3)	260	221		

Core Laboratories, In

NOTE:

(*) REFER TO ATTACHED LETTER.

- (1) REDUCTION IN PRESSURE FROM estimated SATURATION PRESSURE TO ATMOSPHERIC PRESSURE.
- (2) AFTER REDUCTION FROM ORIGINAL RESERVOIR PRESSURE TO ZERO POUNDS PER SOUARE INCH.
- (3) RESERVOIR PRESSURE MAINTAINED BY WATER DRIVE AT OR ABOVE estimated original saturation pressure.
- (4) NO ESTIMATE FOR GAS PHASE RESERVOIRS.

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees assume no responsibility and make no warrancy or representation, as to the productivity, proper operation, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

DWL-494-	J PRINTED	TREATI	MENT R	EPORT	JELL DIV	_	RE DOM CHE			)		3/	6/	74	
	HE AND HUA	1Z	•		East Pol	elar un	i <del>k</del>	MR	Hag	,	-	15-0	55-	79	16
East	Popla	růn	+i	*0	Red Piv			TUBING A (25)	HOD BOL	E OOM	C	70G; 25	WABLE	CBG:	500
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# DOVIELL DIVISION OF THE DOW CHEMICA

SERVICE AND INVOICE NUMBER. ∫Please indicate on all remittances and send to: P.O. BOX 21

TULSA, OKLAHOMA 74102

SERVICE ORDER RECEIPT

TERMS: DUE END OF MONTH OF SALE. SERVICE FROM DOWELL DISTRICT OUTPOST CUSTOMER ORDER NO. WELL NAME AND NUMBER LOCATION AND POOL **SERVICE ORDER** 11 1 1 2 12 Aug to Santa IMPORTANT: SEE OTHER SIDE FOR TERMS & CONDITIONS I have read, understood and agreed to the terms & conditions printed on the reverse side hereof and represent that I have full authority to accept same and sign this order. COUNTY, CITY (IF WITHIN CITY LIMITS) & STATE TYPE OF SERVICE CUSTOMER CUSTOMER'S AUTHORIZED AGENT ADDRESS CITY, STATE & ZIP CODE SERVICE INSTRUCTIONS: ITEM NO. QUANTITY UNIT Material, Equipment and Services Used **Unit Price TANDOMA** THIS IS **SUB TOTAL** Gallons License Fee Gallons License Fee RECEIPT: THE UNDERSIGNED HEREBY CERTIFIES THAT THE Tax on \$ MATERIALS AND EQUIPMENT LISTED ABOVE WERE RECEIVED AND Tax on \$ THE SERVICES WERE PERFORMED IN A WORKMANLIKE MANNER. CUSTOMER TOTAL DWL-260-M PRINTED IN U.S.A. AUTHORIZED AGENT

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AUTHORIZED AGENT



THE DOW CHEMICA

SERVICE ORDER RECEIPT

SERVICE AND INVOICE NUMBER.

Please indicate on all societances and send to: P.O. BOX 21

TERMS: OUE END OF MONTH OF SALE. TULSA, OKLAHOMA 74102 CUSTOMER ORDER NO. BERVICE FROM DOWELL DISTRICT | OUTPOST WELL NAME AND NUMBER LOCATION AND POOL **SERVICE ORDER** 2 1/1 1/10 IMPORTANT: SEE OTHER SIDE FOR TERMS & CONDITIONS I have read, understood and agreed to the terms & conditions printed on the reverse side hereaf and represent that I have full authority to occept same and sign this order.

CUSTOMER COUNTY, CITY HE WITHIN CITY LIMITS) & STATE CUSTOMER'S NAME AUTHORIZED AGENT ADDRESS ZIP CODE CITY, STATE & ZIP CODE SERVICE INSTRUCTIONS: ITEM NO. QUANTITY UNIT Material, Equipment and Services Used **Unit Price AMOUNT** SUB TOTAL Gallans License Fee Gallons License Fee RECEIPT: THE UNDERSIGNED HEREBY CERTIFIES THAT THE 96 Tax on \$ MATERIALS AND EQUIPMENT LISTED ABOVE WERE RECEIVED AND % Tax on \$ THE SERVICES WERE PERFORMED IN A WORKMANLIKE MANNER. CUSTOMER TOTAL DWL-250-M PRINTED IN U.S.A.

# DOWELL INCORPORATED

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#### DOWELL INCORPORATED

### TREATMENT REPORT

TREATMENT No.

STATION OR DISTRICT MANAGER

		<del></del>	Viston			
OWNER MUTPHY POOL CAST	Corporation	LEASE	PU		ELL NO. 12	
POOL C'AS	oplar	COUNT	Mooseve		ATE MONT	019
LOCATION		OWNER	S REPRESENTATIVE_		<del></del>	
•		WELL	DATA			
FORMATION	2040		PERFORATING DATA	OR DAY ZONE	٠٩	
PAY-FROM			SHOTS/FT.		ROM	TO
PRESENT TOTAL DEPTH		<del></del>		<u> </u>		
PIPE DATA-			···			
CASING SIZE	5 wr. 15		<del></del>	<del>-</del>		
	SKS, CEMENT					
LINER SIZE			PRODUCTION-			
LINER DEPTH-FROM	та			OIL	WATER	G. O. R.
LINER DESCRIPTION	·		INITIAL			
TUBING SIZE 2" E	CE DEPTH	<u></u>	PRESENT			
PACKER-TYPE Buk	C.Y DEPTH	<del></del>				
PACKER FURNISHED BY	OPERATORDOWEL	<b>.</b>	ACIDIZING, SHOOTIN	IG AND LOGGI	NG RECORD-	
COMPLETION DATA-			-			<del></del>
DATE	CARLE TOOL					<del></del>
	ORILLING FLUID.		•••			
SIZE OPEN HOLE	TRILLING FEOID.		<del>-</del>			
	D		D OF TREATMENT			
TIME PRESSURE A.M. OR () CASING TUBING	ARRIVAL AT LOCATION W		GALS. OF DOWELL	-Jc/ x	100,100	ofel xs
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	det Enou	1/2	Can - Coul	4	FLUS	SHBBL
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	LEFT LOCATION					
IF TREATMENT IS NOT CONVENTIONAL LINGREASE OIL OR GAS PRODUCTION, ST	LIMESTONE FORMATION TREATMENT T					

#### DOWELL INCORPORATED

# TREATMENT REPORT

TREATMENT No.

			1/1/12		DATE_		, 19 <u>-2</u>
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LOCATION			• •	PRESENTATIVE			
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FORMATION Char	105		_ PEF	FORATING DAT	A OR PAY ZON	ES	
PAY-FROM	то		<del>-</del>	SHOTS/FT.	1	FROM	то
PRESENT TOTAL DEPTH	P. B. FROM	·	_			<del></del>	
PIPE DATA-	•					<del></del>	
CASING SIZE 5	5 wr2	15			<del></del>		<del></del>
CASING DEPTH							
	WT		PRO	DUCTION-			
LINER DEPTH-PROM	то		_		OIL	WATER	G. O. R.
LINER DESCRIPTION_			_	INITIAL		<del> </del>	
TUBING SIZE	EUE DEPTH_		_	PRESENT			
PACKER-TYPE	DEPTH						
PACKER FURNISHED I	BY OPERATOR	DOWELL	— ACI	DIZING. SHOOTI	Chok		
COMPLETION DATA-				<u> </u>			<del></del>
DATE	CARL 5 7001						
ROTARY							
SIZE OPEN HOLE			<del></del>	-			
SIZE OFEN HOLE			_				
	l	DETAILED	RECORD O	TREATMENT	ř		
TIME PRESSURE							
A.M.) R P.M. CASING TUBIN	G		REMARKS		_	w.f	
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77	71/	Pett c	vater	70	Fill 11	- //	ED88L
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IF TREATMENT IS NOT CONVENTIONAL INCREASE OIL OR GAS PRODUCTION.	L LIMESTONE FORMATION TR	EATMENT TO					
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AVAILABLE NEED OVERLL CEMENT LEFT IN PIPE	TANATERI :NI	<del></del>	_ 5·M (m)	<u> </u>	15-MIN	· · · · · · · · · · · · · · · · · · ·	. CEMENT SLU	RRYL BI	BL-G <b>AG</b>				
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AVERAGE RATES IN BPM	9 go	AVAIL	ADLE.	زـ	USEO						ARKS		,
CEMENT LET IN PIPE	• • •				· · · <del></del>		•		•	ر ح		_,,<	
CEMENT LET IN PIPE		~	\	•	2	•	<del></del>				<del></del>		<del></del>
			1520	°	LEWKIL		<del>-</del>						
	ING	CEMF	IT LEFT	IN PIPE									
		CEMEN		IN PIPE				-				2	<u> </u>

CUSTOMER



FORM 1908 R-2

### WORK ORDER CONTRACT AND PRE-TREATMENT DATA

ATTACH TO		Ø	14	4	9	<u>۔</u>
INVOICE & TICKET	NO.		,	_ `	•	4

ハッモ DISTRICT YOU ARE HEREBY REQUESTED TO FURNISH EQUIPMENT AND SERVICEMEN TO DELIVER AND-OPERATE HALLIBURTON SERVICES THE SAME AS AN INDEPENDENT CONTRACTOR TO: AND DELIVER AND SELL PRODUCTS. SUPPLIES, AND MATERIALS FOR THE PURPOSE OF STATE OWNED BY THE FOLLOWING INFORMATION WAS FURNISHED BY THE CUSTOMER OR HIS AGENT WEIGHT SIZE FROM NAME 20 FORMATION THICKNESS BYD CASING LINER Uhuslow PACKER: TYPE TUBING TOTAL DEPTH MUD WEIGHT OPEN HOLE BORE HOLE PERFORATIONS INITIAL PROD: _BPD, H2O_ BPD. GAS PERFORATIONS PRESENT PROD: BPD, H2O_ BPD GAS 4.22 PERFORATIONS 4 11 PREVIOUS TREATMENT: MATERIALS TREATMENT INSTRUCTIONS: TREAT THRU TUBING WANNULUS CASING TUBING/ANNULUS HYDRAULIC HORSEPOWER ORDERED MOD ZONE 5 გ. 2000 CUSTOMER OR HIS AGENT STATES THE WELL IS IN PROPER CONDITION TO RECEIVE THE PRODUCTS, SUPPLIES, MATERIALS, AND SERVICES THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED As consideration, the above-named Customer agrees: (a) To pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists. Halliburton shall not be responsible for and Customer shall secure Halliburton against any liability for damage to property of Customer and of the well owner (if different from Customer), unless caused by the willful misconduct or gross negligence of Halliburton, this provision applying to but not limited to subsurface damage and surface damage arising from subsurface damage. Customer shall be responsible for and secure Halliburton against any liability for reservoir loss or damage, or property damage resulting from subsurface pressure, losing control of the well and/or a well blowout, unless such loss or damage is caused by the willful misconduct or gross negligence of Halliburton. (d) Customer shall be responsible for and secure Halliburton against any and all liability of whatsoever nature for damages as a result of subsurface trespass, or an action in the nature thereof, arising from a service operation performed by Halliburton hereunder. -(e) Customer shall be responsible for and secure Halliburton against any liability for injury to or death of persons, other than employees of Halliburton, or damage to property (including, but not limited to, injury to the well), or any damages whatsoever, irrespective of cause, growing out of or in any way connected with the use of radioactive material in the well hole, unless such damage shall be caused by the willful misconduct or gross negligence of Halliburton. (f) Halliburton makes no guarantee of the effectiveness of the products, supplies or materials, nor of the results of any treatment or service. (g) Customer shall, at its risk and expense, attempt to recover any Halliburton equipment, tools or instruments which are lost in the well and if such equipment tools or instruments are not recovered. Customer shall pay Halliburton its replacement cost unless such loss is due to the sole negligence of Halliburton. If Halliburton equipment, tools or instruments are damaged in the well, Customer shall pay Halliburton the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of Halliburton: In the case of equipment, lools or instruments for marine operations. Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any of Halliburton's equipment, tools or instruments which occurs at any time after delivery to Customer at the landing until returned to the landing, unless such loss or damage is caused by the sole negligence of Halliburton. (h) Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others. Halliburton is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by Halliburton. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be responsible for any damages arising from the use of such information except where due to Halliburton's gross negligence or willful misconduct in the preparation or furnishing of it.

Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.

Upon Customer's default in the payment of Customer's account 60 days after date of invoice, such account will thereafter be subject to interest until paid. In the event it becomes necessary to employ an attorney to enforce collection of such account, Customer agrees to pay all collection costs and attorney fees in the amount of 20 per cent of the amount of the unpaid account.

Halliburton shall not be bound by any changes or modifications in this contract, except where such change or modification is made in writing by a duly authorized executive officer of Halliburton.

I HAVE READ AND UNDERSTAND THIS CONTRACT AND REPRESENT THAT I AM AUTHORIZED TO SIGN THE SAME AS CUSTOMER'S AGENT

We certify that the Fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as amended, has been complied with the fair Labor Standards Act of 1938, as a manufact of the fair Labor Standards Act of 1938, as a manufact of the fair Labor Standards Act of 1938, as a manufact of the fair Labor Standards Act of 1938, as a manufact of 1938, as a manufact of 1938, as a manufact of 1938, as a m

# HALLIBURTON SERVICES JOB LOG

CU: ER MURPHY DIL CLEP PAGE NO. 4

JOB TYPE AC. A DATE 7 15 76.

CHART NO.	TIME	RATE (DPM)	VOLUME	PUM	PS	PRESSU	RE (PBI)	DESCRIPTION OF OPERATION AND MATERIALS
NO.		(DPM)	(GAL)	T	С	TUBING	CASING	
	ļ		· .	<u> </u>				34 7000
							ļ <u>.</u>	Preker & SG75'
						<u></u>		Perts 6 3692 - 56919
								3000 94/ 1707 502
	,							3000 9A/ 1707 SOR
	12.2		<del>                                     </del>	<del>                                     </del>			<u> </u>	04/11:
	1020	2	1. /	1	,			Acid a Tob Tail Sel Prote
	1038		33.4		,	30c -		
	1047		<del> </del>	-		1000		Pump Acid To Test, 11 15
	1053			ļ		13:0		73. 72
	105%		·			1750	ļ	7.
	1035					2000		
	11:34					325U		
	1154					2500		11 11 11 11 11
	1223				-	275%		<i>₩</i> 70
				-				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
	1227		<del></del>			3000	<b> </b>	No 10
	333	<u> </u>	348	-		3050		In CREASE PRESS Folian oc
-	35	1.3	-			-0-		Some Mining Broke, 5/ 70 Rev At.
<del></del> .	V430	2,	4/5				250	Rev out Acid,
<del></del>	1500			1.				Rev out Acid,
·.								
	1900							Theo F/ 715 76
	7700							111111111111111111111111111111111111111
	<u> </u>						<u> </u>	
			<del>                                     </del>				<u> </u>	
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#### MALLIBURIUM SERVICES

JOB LOG

CUSTOMER MURPHY O: 1 CORP PAGE NO. 7.14.16

PORM 2013	PR+1				77.0		OATE
CHART NO.	TIME	RATE (OPM)	VOLUME (BBL) (GAL)	РUМР	S PRESSU	RE (PSI)	DESCRIPTION OF OPERATION AND MATERIALS
3	1944	1.25	106	<i>;</i>	1500		All Acid IN FORM St O. 1-Kish
	1954	1.25	119	/	1500		All Acid IN Form St O. 1-Kish
							(20 BBIS S. WATER 45 GAL 3W)
بمر	2010	1.0	54				20 BBIS O. Flush IN
	2010		<u> </u>		1.450		ISIP - 1430
	2015	ļ			1250		5 min Shut IN 1250
	· .						Release - Flow Back
	ļ					ļ	
						<u> </u>	
		<u> </u>					
	<u></u>	·				<u>                                     </u>	
	<u> </u>						
	ļ		<u></u>			<u></u>	Max 2nts 3.4 BPM
	<u> </u>						MIN Rate . 9 BPM
	<u> </u>	<u> </u>					AUE RATE 1.2 BPAC
	<u> </u>		<u> </u>				MAX PSI 1500
	<u> </u>						MIN PSI 500
			•:		<u>.                                    </u>	1	AUC PSI 1400
						<u> </u>	
							Total Lond
							119 BBIS Acid
	·						20 " TRENTED WINTER (3N.
							34 " S. WATER
							173 83/3
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			1				
	<del>•</del> -	·	<del></del>		<del></del>		<del></del>

# HALLIBURTON SERVICES JOB LOG

ORM 2013	R-1			T BOL	YPK _	Ac: I		DATE 7. 1.1.76
CHART NO.	TIME	RATE (DPM)	VOLUME (BDL)	PUI	dPS C	PRESSUI TUBING	CABING	DESCRIPTION OF OPERATION AND MATERIALS
·	<u> </u>		IGAL	<u> </u>	_	·	CABIRO	Pull Tools Set Picker @
	1502	14	1/2				900	5580' Test ANN TO 9007
								Holding ok Relian
	1341	1.3			1			CIRC DOWN AND TO gat B. Pl.
	1551		18.0		1			Shut Duwn
			1					B-2- 3000 91
								PACKUR & 5628,
								B. Plug & 5673'
								PERTS @ 5632' 5640'
	1657	2.0		1		250		Start Acia, Poma To Picter
	1710	32.4	2.1	,				Set PACKER, Pungi Acid To
	1712	3/10	34.0	/		50c		Acid co Ports
مسما	1717	7.3	6.5	/		700		God BBh Die EN Shut Denew
		•						Move Packet Down While
	フ2フ	1.8				300		Pund Achil Fute FURA
	1730		10.0					Shut Down 10 PBI Acid Ex
								FORM. MOUL PACKED TO 5590'
								Acidiza B.1 1 B-2 1 6 3 2
								With 5000 gal, (Add twent Jones
	ļ			<u> </u>				Perts 3614' 5622' 5655' 5660
								5-632' 5640'
	816					•	800	PRESS CSG ROW
	1577	1.3	<u> </u>			250	-	Panis Acid Francis
	1830	3. 4	Já.U			1000		15 BOB ACIN IN PUEL
	1832	2.2	20,0		<u> </u>	1000		20 " " " "
<	1835	1. 8	24.5			1000		D4.5 Transper
	1836	3.0			<u> </u> -	/ <del>-</del> 500		PSI TO 1500 3 BPK
<u>, ,</u>	1847	1.25	47.8			1500		Lucy yet Alice The live
	1913	.1/5	75.3		<u> </u>	1300		3/50 " " "
	1924	1.0	õ5		igsqcup	1500°		All Acid Far Told stillash
	134	1.6	73.2		<u> </u> -	1500		yong sal zi Fire
								,
								Continuated on Page # 3
				<u> </u>				•
							,	
				_				

# HALLIBURTON SERVICES JOB LOG

CUSTOMER MICROPHY COMP PAGE NO. I

PORM 2011	3'R-1		•	70B T	YPE _	190.	<u>' کئ</u>	DATE 7-14.76
CHART NO.	TIME	RATE (DPM)	VOLUME	<b></b>	MPS	PRESSUR		. DESCRIPTION OF OPERATION AND MATERIALS
<del></del>	1	(Br=,	(GAL)	T	С	TUBING	CASING	**
·t	+		<del> </del>	$\vdash$	<del></del> '	<del></del>	<b></b>	1 2000 91 1100 202
		<del>                                     </del>	<b></b>	$\vdash$	<del>                                     </del>	<del></del>		Proker & 5643'
	+	<del>  '</del>	<del> </del> '	<del> </del>	<del> </del>	<del>                                     </del>	<del></del>	B. Phing @ 5673
	<del> </del>	<u> </u>	<del> </del> '	—	<u> </u>	<del> </del> '		Perfs (B.3) 5655. 5660'
	1 - 1 - 1	<del>  '</del>	<del>                                     </del>	<del>                                     </del>	<b></b> '	<del>                                     </del>	<del></del>	, ,
	748	2.5	<u> </u>	/	<u> </u>	<u> </u>	<del> </del>	Fill Note
2	801	2.0	28	/	<b></b> '	<u> </u>	<del></del>	Hole Full & Cinculating
3-/	302	2.0	!	<u></u>	<u> </u>	100		Start Acid, Spot To Tub TAIL
	8/8	2.0	32.7		<u> </u>	100	<b></b>	Acide Tub Tail Sel Packet
<u> </u>	820	<u> </u>	<u> </u>		<u> </u>	<u> </u>		Pump Acid To Peats
6	321	1.4	34			350	150	Acid e Perts
7	825	2.0	6.0			<del></del>	1250	6 BB/s Acid IN FURM (Comm)
<u>.</u> 5	832					300	300	Hook up To Neu out Acid
							<u> </u>	PRESS. Das FRACOMETER Dont wit
				<u>.</u>				Rev out Acid affig Pump
	920							All Acid Back But Zougal
1	1233	2.1		1		150	Ī	Stret Acid
<u>2</u> 	1248		32.7	/		250		Acide Tub Till Six Packer
	1254	1.0				300		Pump Acid To Piets
4	125	71.0	34.0	<b>√</b>		400	400	
5	1304		43.0		1	1050	1050	<u> </u>
					3.00			\$ 22 GAI 3 N, 9 BB/s AC. VI.
6	1311	<b>1</b> .2	18.0		<del></del>	<del>+</del>	1500	18 BB/s AC. J IN MAN PSI 1500
			<u> </u>				·	Slow Rate 0.9 BPM
7							·v	23 RBL Acid In Show Pate
7 8 9	1330	.2	32.7			1500		32.7" " " MAR PSI. Slow i
9_	/332	.6	33,3					BRUKE DUWN INCREASE RATE
10	1.335	12	35.7					35.7 ABIS (1500 gal) Acid IN TURN
	1348	.4	43,0				1	All Acid IN FURM, St. O. Flysh
11 12 12 13 14	1408		<i>5</i> 3					10 BBIS O. Flush IN
1/2	1408					1450		ISIP - 1450
13	1413		<u></u>			1275		5 M. Sind In MAX-MAX
14	1418					1200		10 " " 1 PSI - KATE
15	1423					1150		15 " " 1500 1.2
								Releise Press Min PSI. PAT
					<u> </u>			1050 -2
								JAVE - 1430 PSI, YUBPA
					,——			

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